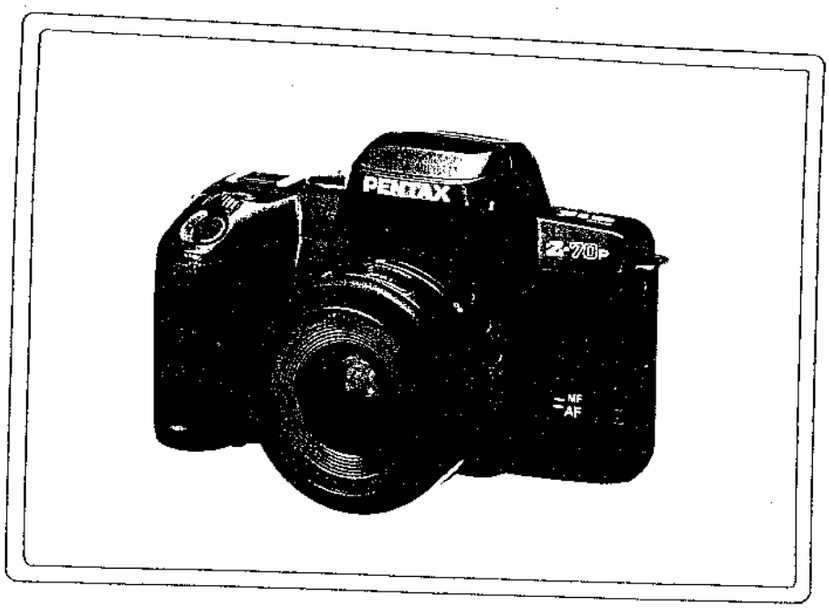
PENTAX®

Service Manual

ENGLISH

PENTAX Z-70P QUARTZ DATE



PRODUCT No. 27230 Z-70P QUARTZ DATE
PRODUCT No. 27234 PZ-70
PRODUCT No. 27236 Z-70
PRODUCT No. 27238 PZ-70 PANORAMA DATE
PRODUCT No. 27239 Z-70 PANORAMA DATE

LOCATION QUANTITY DELIVERY#
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CAMERA SERVICE MANUAL

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Service Engineering Section.
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【 SPECIFICATIONS 】

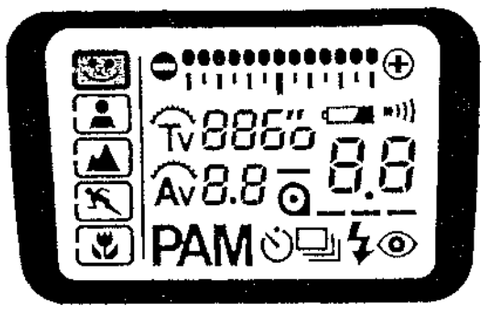
Type:	TTL autofocus, auto-exposure 35mm SLR with built-in TTL auto flash (RTF)
Format:	24x36mm
Usable Film:	35mm perforated cartridge film. DX-coded film with ISO 25 5000, non-DX coded films are set to ISO 100.
Exposure Mode:	Picture Mode (Green Operation Mode, Portrait Program Mode, Landscape Program, Mode, Action Program Mode, Close-up Program Mode), Programmed AE Mode (Program-Shift is available), Shutter-Priority AE Mode, Aperture-Priority AE Mode, Manual Exposure Mode, Bulb Mode
Shutter:	Electronically controlled vertical-run focal-plane shutter, Electromagnetic release. Speed range:(1)Auto 1/2000-30 sec.(stepless),(2)Manual 1/ 2000-30 sec.(3)Bulb, Shutter lock by turning the main switch off.
Lens Mount:	Pentax K$_{AF}$ bayonet mount(K-mount with AF coupler, lens information contacts and power contacts)
Compatible Lens:	Pentax K$_{AF}$, K$_{AF-}$,K$_{A}$, and K-mount lenses are usable. Autofocus is possible using AF Adapter with K$_{A}$-mount lenses
Autofocus System:	TTL phase-matching system, AF operational brightness range: EV0 to 18(at ISO 100 with f/1.4 lens), Focus lock available using shutter release button. Focus Mode: AF(predictive AF provided), Manual[MF]
Power Zoom:	3-Speed Intelligent Power Zoom lens with built-in motor with FA zoom lens
Viewfinder:	Penta-mirror finder, Natural-Bright-Matte focusing screen, Field of view:92%, Magnification:0.77X(with 50mm lens at ∞), Diopter: -1diopter.
Viewfinder Indication:	Focus Information:In-focus (Green lamp [○] is lit), front or back focus signals and unable-to-focus indicator (Green lamp blinks), Shutter speed indication, Aperture indication, Flash ready indication [ϟ] is lit, Bar graph(exposure compensation), Over or Under exposure indication in Manual Exposure Mode, [▨] exposure compensation indication.
External LCD panel Indication:	[🏃] = Green Operation Mode, [👤] = Portrait Program Mode, [🏔] = Landscape Program Mode, [🏃] = Action Program Mode, [🌷] = Close-up Program Mode, [P] = Programmed-AE Mode, [A] = Shutter-Priority/Aperture-Priority AE Modes, [M] = Manual Exposure Mode, [bu] = Bulb Exposure, [⏲] = Film status information, [▭] = Battery exhaustion warning, [ϟ] = Built-in flash ready indication, [ϟ] = blinking slowly flash recommended warning, [ϟ] = blinks rapidly Inappropriate lens warning, [⏲] = Self-timer shooting, [▪▫] = PCV signal information, [Av] = Av value, [Tv] = Tv value, [👁] = Red-eye reduction flash mode, [▭] = Single frame shooting mode, [▭▭] = Consecutive shooting mode, Exposure compensation value = − 0.3 to +0.3, Shutter speed indication = 2000 to 30", Aperture value indication = f/1.2 to 90, Bar graph = Exposure compensation value, Over or under exposure indication in manual mode.
Self-timer :	Electronically-controlled type with delay time of 12 sec. Start by depressing of shutter release button, Operation confirmation: By PCV beep tone. Cancelable after operation
Mirror :	Quick-return mirror with AF secondary mirror
Film Loading:	Film advances automatically to 1st frame after back cover is closed, Film information is provided
Film Wind & Rewind:	Auto wind/rewind and rewind stop by built-in motor, Consecutive or Single advance mode, Approx.1.8 frames/sec.(consecutive mode), Auto rewinding starts at end of roll, Film rewind/completion of rewinding is displayed on the LCD panel, Auxiliary rewind button will rewind film in mid-roll
Exposure Meter:	TTL multi(2)-segment metering, Metering range from EV1 to EV21 at ISO100 with 50mm f/1.4 lens
Exposure compensation:	+/− 3EV in 0.5EV step increments
Flash :	Series-control, Retractable TTL Auto Flash (RTF), Guide number:13 (ISO100/m), Illumination angle, Covers 28mm lens angle of view, Automatic switch to flash-sync-speed in the range from 1/100 to a slower speed, Day-light-sync flash, Slow-speed-sync flash, Contrast-control-flash sync (ISO range=25-400),
Flash sync :	Hot shoe with X-contact with couples with Pentax dedicated auto flashes, ISO range=25-800
Power Source:	One 6V lithium battery (2CR5 or equivalent)
Battery Exhaustion Warning:	Battery exhaustion symbol [▭] is lit (blinking when the shutter is locked: no indication on the right-hand edge of the viewfinder)
Dimesion and Weight:	146.0mm(W)x93.0mm(H)x66.5mm(D) (5.7"x3.7"x2.6") 450g(15.9 oz) body only without lithium battery
Supplied Accessories:	Hot Shoe Cover F$_{A}$, Release Socket Cap F$_{A}$, Camera Strap F$_{AL}$, Eye Cup F$_{A}$, Finder Cap

Z-70 CAMERAS (P.D. : panorama date)

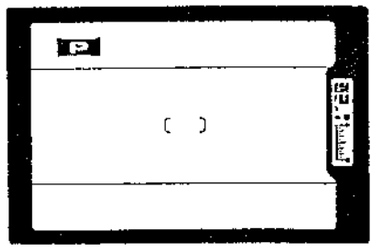
Product No.	Market	Panorama	Date	Lens mount ring
27230 (Z-70P QD)	Japan	●	●	Metal
27234 (PZ-70)	US	—	—	Black (plastic)
27236 (Z-70)	Others	—	—	//
27238 (PZ-70 P.D.)	US	●	●	//
27239 (Z-70 P.D.)	Others	●	●	//

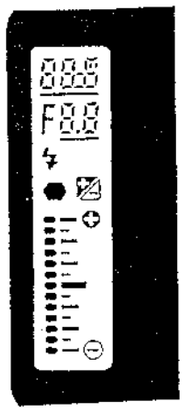
【 LCD AND FINDER INDICATIONS 】

■ LCD panel indications



■ Finder indications





【 OUTLINE OF DISASSEMBLY AND ASSEMBLY 】

Follow the procedures of disassembly and assembly concerning the notice in the section described. When 【 ADJ/CONFIRMATION 】 or 【 CONFIRMATION 】 is presented in the procedure of assembly, refer to the subsection of "Adjustment and Confirmation".
Disassembly and assembly outline chart is as follows:

1. External parts (p.4)
‖
2. Main P.C.board (p.6)
‖
3. Main unit and related parts (p.8)
====== 4. Front housing block (p.12)
‖
5. Flash block (p.17)

1. External parts

Use an anti-static working mat and the wrist strap.

☆ Body accessories: Hot shoe cover FF
Eye cap FF
Release socket cap FF

[Disassembly procedures]

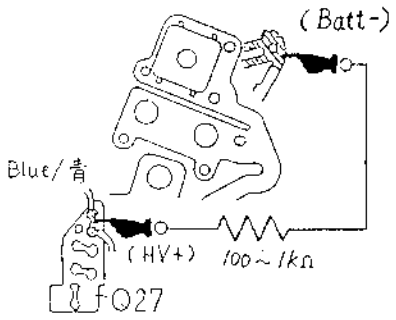
1-1 A151 (Grip rubber)

1-2 Bottom cover (0-A401/27234-A401)
① 8 screws
② 0-A402 (Battery cover assy.)

1-3 Q1 (Flash cover)
① Set the flash at the pop-up position.
② 2 screws, unhook two hooking part of Q1.

1-4 0-A301 (Top cover assy.)
① 7 screws:
1 screw under the flash
(set the flash pop-up)
1 screw (open the back cover)
1 screw inside the battery chamber
A349 x2, A350 x2
② Remove 0-A301 from the drive button side.
③ A344 (Drive button)
A345 (F-mode button)
A347 (Drive/Flash mode SW)
A308 (Mode SW)

★ Discharge electricity of the main capacitor with a 100-1k ohm resistor.
*Land of the blue wire (HV+)
*Battery contact piece with black wires (Batt-)



1-5 0-A102 (Front cover assy.)
① 2 screws
② Remove 0-A102 from the grip side.

1-6 A17 (Film guide)
① Remove Back cover and 2 screws.

1-7 A152 (Side cover)
① Pull A152 backward, and remove it.

☆ Attach the Back cover again to protect the shutter curtains.

[Assembly procedures]

1-1 Remove the back cover, then install A152 and A17.

1-2 0-A102 (Front cover assy.)
☆ Set both Body and 0-A102 with the AF-position, then install 0-A102 aligning the AF mode SW.
【 Note 】 Do not pinch the wires when installing.
【 Confirmation 】 Check the function of AF-mode SW.

1-3 0-A301 (Top cover assy.)
☆ No dust, fluff, etc. are found on LCD panel, Eypiece and Top cover. Clean switch contact lands.

1-4 Q1 (Flash cover)
【 Confirmation 】
Check the function of flash. (pop-up and down)

1-5 【 CONFIRMATION 】 2. Flash check (p.18)

1-6 【 ADJ/CONFIRMATION 】
3. Adjustment and check with computer program [Auto exposure and Auto focus] (p.19)

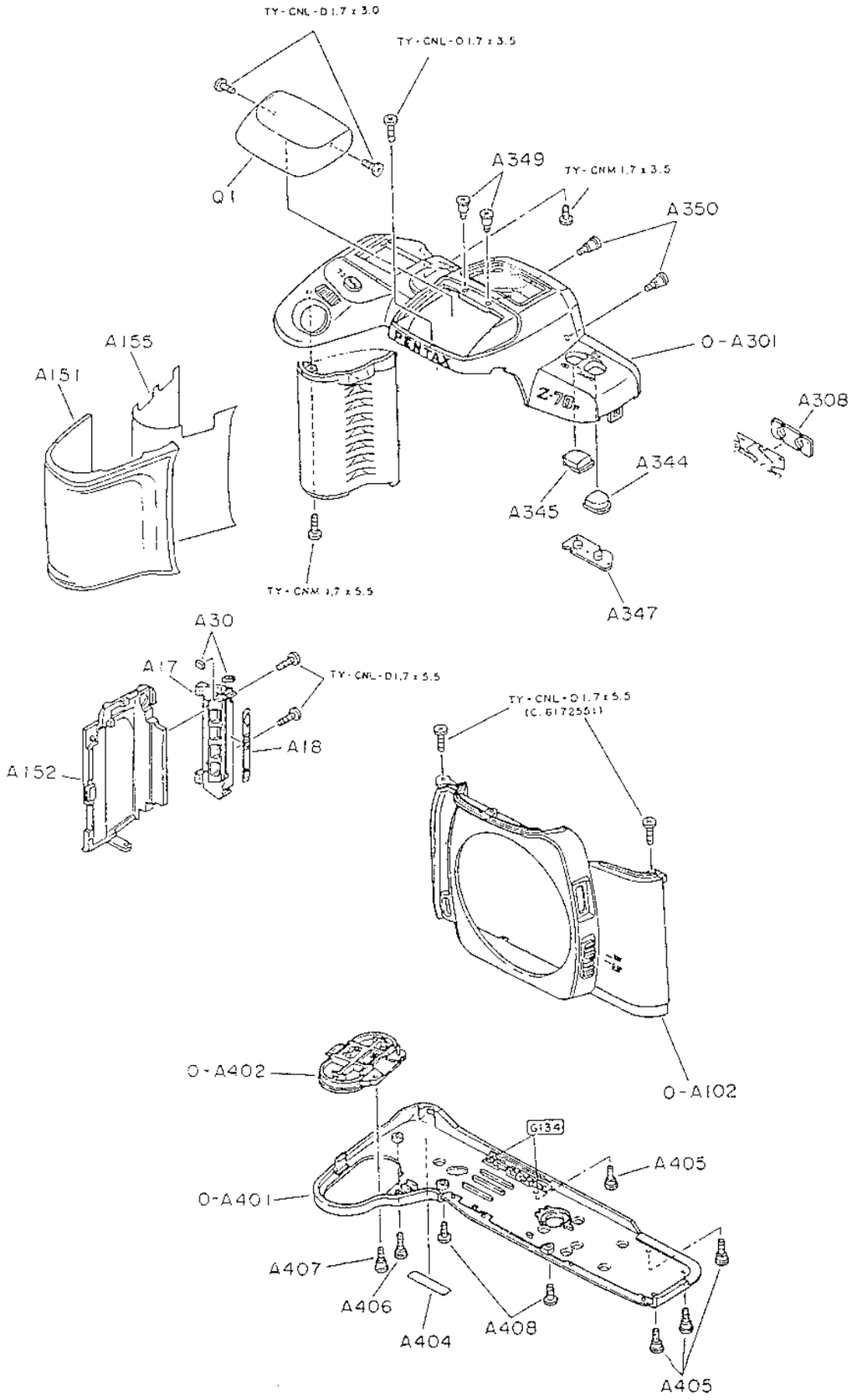
1-7 Bottom cover (0-A401/27234-A401)
0-A402 (Battery cover assy.)
※ If the camera is with Panorama model, follow as mentioned below:
Before installing 0-A401, set panorama levers of the shutter block, P select SW assy.(0-T108) and 0-A401 to the same position. (:panorama/standard format)

1-8 A151 (Grip rubber)

1-9 【 CONFIRMATION 】
4. Exposure value and DX switching (p.20)

1-10 【 CONFIRMATION 】 5. AF and Power zoom (p.20)

1-11 【 CONFIRMATION 】 6. Function check (p.20)


TY-CNL-D1.7 x 3.0
TY-CNL-D1.7 x 3.5
Q1
A349
TY-CNM 1.7 x 3.5
A350
A155
A151
PENTAX
Z-70r
0-A301
A308
A344
A345
TY-CNM 1.7 x 5.5
A347
A30
A17
TY-CNL-D1.7 x 5.5
A18
A152
TY-CNL-D1.7 x 5.5
(C.61725511)
0-A102
0-A402
G134
A405
0-A401
A407
A406
A404
A408
A405

2. Main P. C. board

[Disassembly]

2-1 A322 (Accessory shoe)

① A323 (Accessory shoe spring)

② A328 x3 (...shoe retainer screw A)
A329 (...shoe retainer screw B)

③ 0-A32 (Accessory shoe base assy.)

2-2 A36 (Main SW base)

① 8 lead wires on Q27 (Flash relay P.C.board)

② Remove Q27 and Flexible board of Main SW and Hyper SW.

③ Two A36 retainer screws

2-3 0-T100 (Main P.C.board)

① Release SW part: 2 screws

② Right side: 5 lands (Q200),
1 screw

③ Upper right: 3 lead wires (I301, 0-S200)
2 lands (0-C101)
1 screw (Ni)

④ DC/DC converter part: 9 lead wires,
1 screw

⑤ Shutter flex. board: 4 lands (one is open)

⑥ Right side of flash:
10 lands (Flash SW, T71)

⑦ Upper left: I2, I4, CNL-D1.7x2.2
CNL-D1.7X4.0 (Ni)
TY-CNM1.7x3.0, 0-A9 (...SW base)

⑧ External LCD part: 1 screw
Remove the flex. board from a positioning pin.
5 lead wires (K101, N300)

⑨ Photo sensor part: 1 screw, Black tape (6X15)

⑩ DX contact part: 9 lands (0-J201, R110)

⑪ Bottom part: BT (6x10)
I1·I3·CNL-D1.7x2.2
10 lands (A33-Earth plate,S300,T61)
1 red wire (VDD2 from DC/DC)
TY-CNM1.7x4.0

※ Panorama model only:
3 lead wires (θ 310),
1 screw (D15),
0-T108 (P select SW assy.)

[Note of assembly]

A36 (Main SW base)

After installing A36, arrange 4 lead wires of Q100 on A36, and install Q27 and Main SW part.

0-T100 (Main P.C.board)

☆ Concerning TYPE of AF module (M100)
When replacing M100 or 0-T100, remark the type of M100 before installing 0-T100.
Confirm the date mark (y.:'95=7, m., day) on M100.
Before 7.3.8 → TYPE 1 (※ Z-70P only)
On and from 7.3.9 → TYPE 2

☆ Clean every connecting lands before install.

*** Installation of 0-T100 ***

❶ Upper right part

❷ Release SW part

❸ Right side (Q200)

❹ Shutter flex. board:
4 lands (2nd land from top is open)

❺ DC/DC converter part: Arrange 4 lead wires (0-S200, 0-S250) over the P.C.board.

❻ Right side of flash

❼ Upper left: 5 lead wires (K101, N300)
☆ The edge of I4 should not project for the switch lands.

❽ Install Photo sensor temporarily.

❾ Bottom part:
-1. Align DX contact part and Flash photo sensor part.
-2. Position the bottom part. TY-CNM1.7x4.0
※ Panorama model: 1 screw (D15)
-3. Flex.board of S300: 4 lands
-4. Flex. board retainer plate and rubber (I1, I3)
-5. 6 lands (A33, T61)
-6. Solder 1 (or 4) lead wire(s).
Arrange the red wire (VDD2 from DC/DC) same way as wires from AF motor, and arrange 1 (or 4) lead wire with BT(6x10) as shown in the diagram.

❿ DX contact part (0-J201, R110)

【 ADJ/CONFIRMATION 】

1. Photo sensor position (p.18)
After adjusting, apply bond to fix the sensor and stick on BT (6x15).

⓫ Install the external LCD block

⓬ Unsolder the land of "※ UNSOLDER" on the right side of flash block.
(To set the main SW off condition.)

Fig. 2-1

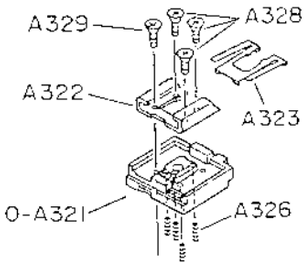


Fig. 2-2

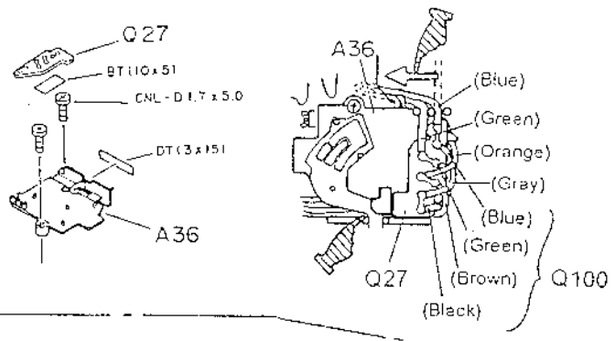
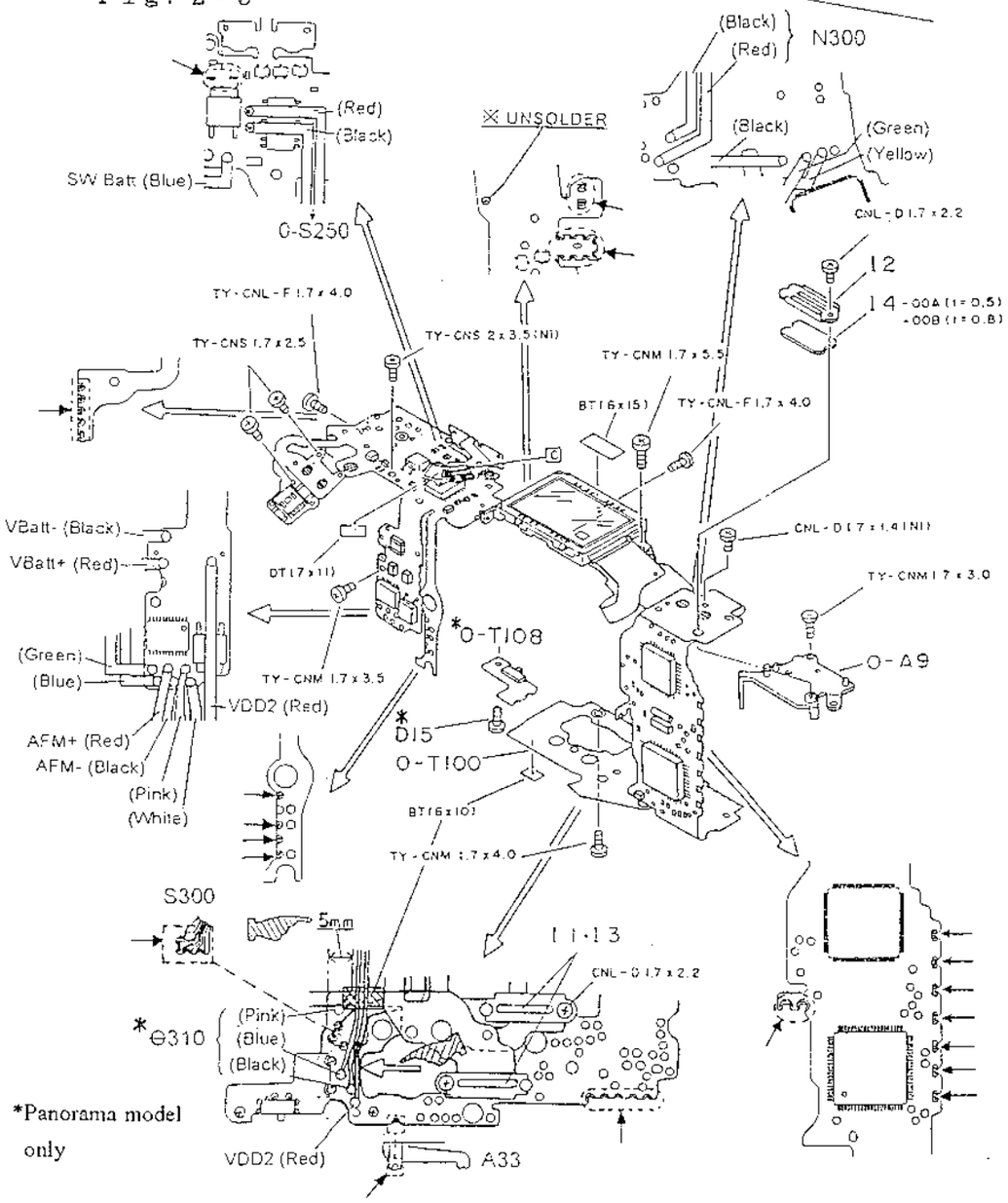


Fig. 2-3

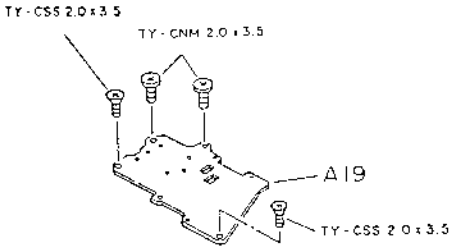


3. Main unit and related parts

[Disassembly procedures]

3-1 A19 (Accessory shoe base plate)

① 4 screws



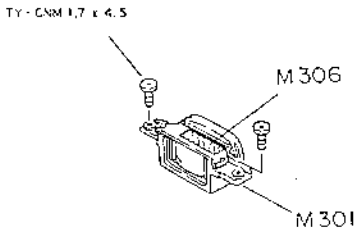
[Note of assembly]

Do not pinch lead wires when installing A19.

3-2 M301 (Eyepiece frame)

① 2 screws

② M301, L4, M302, M306



[Note of assembly]

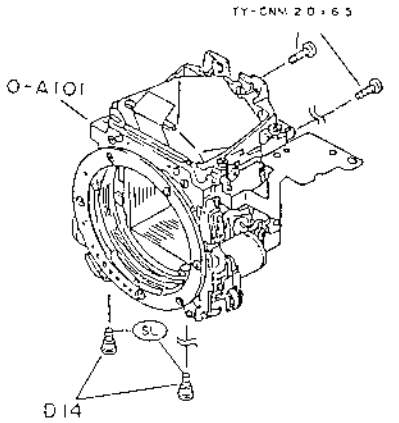
Clean L4 (Eyepiece lens) and Penta mirror assy. before start to assemble.

【 Note 】 L4 is made of plastic.

3-3 0-A101 (Front housing block)

① 4 screws: TY-CNM2.0x6.5 x2,
D14 x2 (...retainer screw B)

② Remove 0-A101 from Mirror motor first.



[Note of assembly]

Set both Shutter block and 0-A101 at the charge condition, and install 0-A101 from θ 100 side first.

【 Adj/Confirmation 】 Mechanical back

Standard: 45.46 ± 0.04 mm

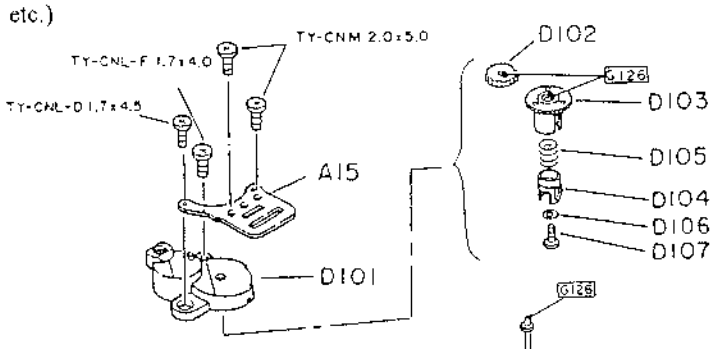
☆ Refer to the "4. Front housing block" on page 12 if necessary.

3-4 Rewind top mech. block (D101, etc.)

① 3 screws (retaining A15)

② A15 (Strap hook, left)

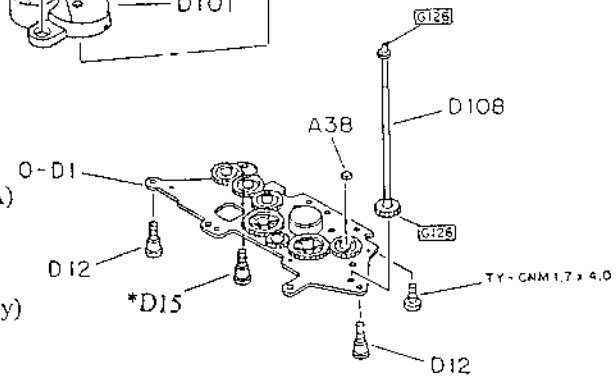
③ TY-CNL-F1.7x4.0



3-5 0-D1 (Rewind bottom mech. plate assy.)

① 4 (or 3) screws: D12 x2 (...retainer screw A)
TY-CNM1.7x4.0
*D15 (...retainer screw C)
(*Non panorama model only)

② D108 (Connecting rod gear)



3-6 Shutter block (27230/27234-0-E000)

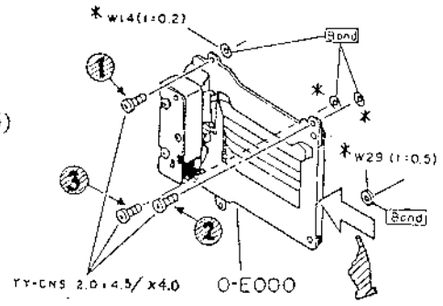
① 3 screws: TY-CNS2.0x4.0

(TY-CNS2.0x4.5: ※ Panorama model only)

[Note of assembly]

Make sure that three *W14 (0.2)'s and one *W29 (0.5) stick on the body. (※ Panorama model only)

Set 0-E000 to the body by pushing toward the grip, and then tighten three screws in numerical order as shown in diagram right.



3-7 A20 (Release SW base)

① 2 screws

② Move 3 lead wires out from the studs of A20 first, then remove A20.

③ I301 (Battery SW)

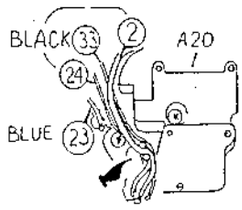
④ 3 lead wires: 23-Blue, 24 & 33-Black (Q200)

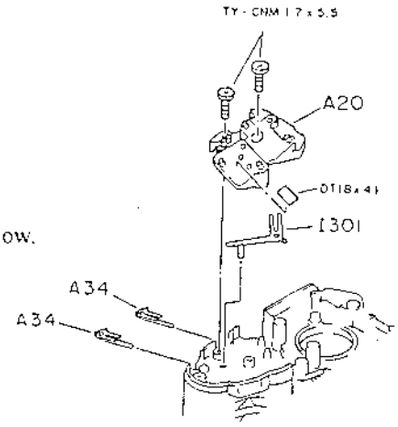
⑤ A34 x2 (Battery contact piece)

[Note of assembly]

A20 should not pinch lead wires in assembling.

After soldering, arrange lead wires as shown in figure below.





3-8 Q211 (Main capacitor)

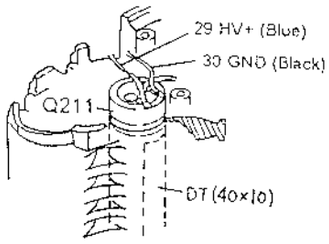
① 2 lead wires: 29-Blue, 30-Black (Q200)

② Pushing upward and peeling off the double-stick tape:DT, remove Q211 from the main body.

[Note of assembly]

Position Q211 correctly so that the letters printed on the Q211 are not seen from the battery chamber.

Install Q211 to the main body by using DT(40X10) while keeping above mentioned direction.

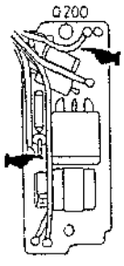


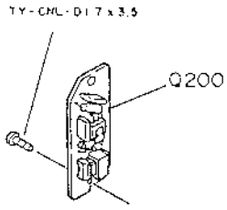
3-9 Q200 (Flash P.C.board)

① 1 screw

[Note of assembly]

Arrange the lead wires in good order before installing Q200.





3-10 0-C101 (Motor receptacle plate assy.)

① 2 screws

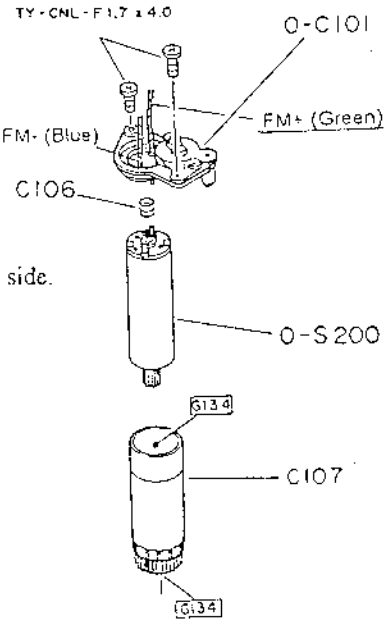
② 0-S200, C106 (Film transport motor, ...spring)

③ C107 (Spool)

[Note of assembly]

Apply G134 to inside of C107.

Distribute two lead wires of 0-S200 through 0-C101;
Green wire (FM+) should be located at the film plane side.

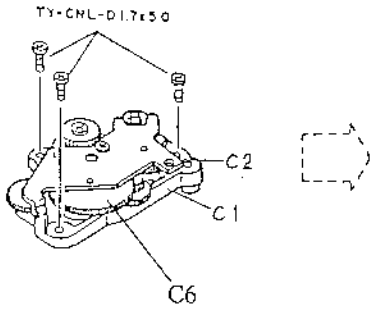


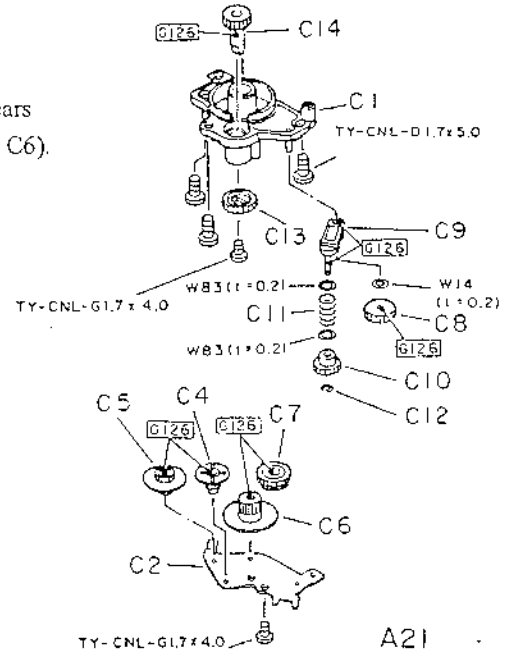
3-11 Film advance bottom mech. block (C1, C2, etc.)

① 3 screws

[Note of assembly]

【 Confirmation 】 : Check the function of the gears and arm by turning gear (ex. C6).





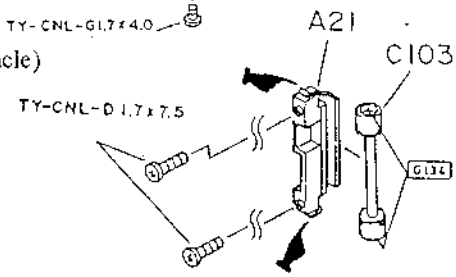
3-12 C103 (Sprocket)

① 2 screws

② Remove top and bottom hooks of A21 (Sprocket receptacle) from the main body first, and remove A21 and C103.

[Note of assembly]

Apply G134 to the inside hole of C103.



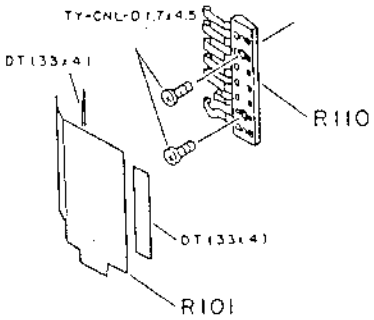
3-13 R110 (DX contact piece)

① Remove R101 (DX contact cover)

② 2 screws

[Note of assembly]

Fix R101 with double-stick tapes properly.



3-14 0-A201 (Back cover assy.)

[Note of assembly]

【 Confirmation 】

Confirm 0-A201 and the back cover key opening and closing function.

3-15 0-A4 (Back cover key assy.)

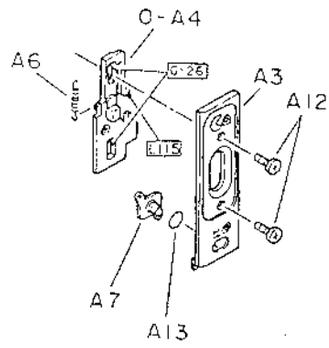
① A12 x2 (...cover retainer screw)

② A3 (Back cover key cover)

③ A13 (Rewind SW protector), A7 (Rewind SW)

④ Set 0-A4 at the closed condition.

⑤ A6 (Back cover key spring)



3-16 T61 (Data P.C. board)

① A28 x2 (...cover retainer screw)

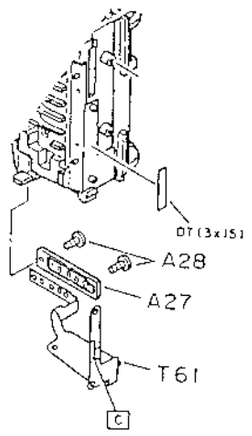
② A27 (Data contact cover)

③ Peel T61 off from a double-side tape.

[Note of assembly]

Aligning T61 with the studs of main body, fix T61 with DT(3X15) to the main body.

Clean the contact lands of T61 using with cleaning fluid.



3-17 Other parts

A10 (Back cover shaft receptacle, top)

A11 (Back cover shaft receptacle, bottom)

A14 (Strap hook, right)

A16 (Film cartridge retainer spring)

0-A22 (Film retainer plate assy.)

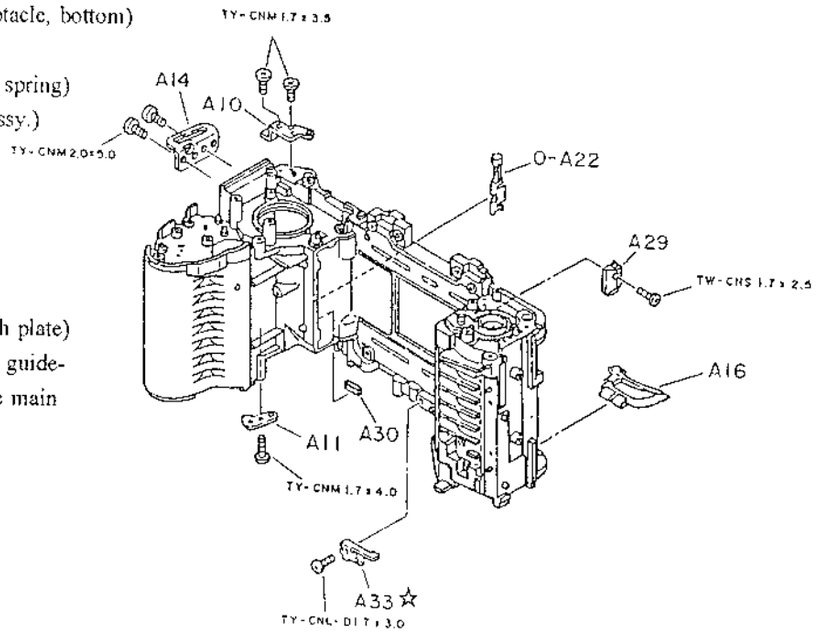
A29 (Film cartridge guide)

A30 (Spacer)

A33 (Earth plate)

[Note of assembly]

☆ Make sure that A33 (Earth plate) is grounding with the film guide-rail — metal section of the main body.

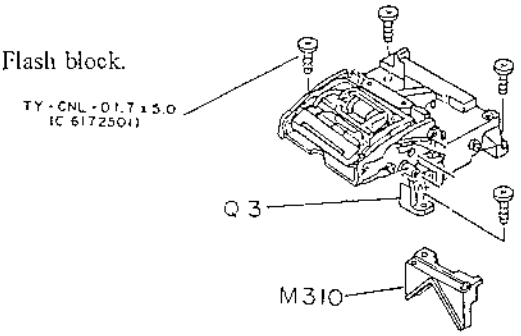


4. Front housing block

[Disassembly procedures]

4-1 Flash block (Q3, etc.)

① Remove T71 (Connector P.C.board) from the Flash block.
② 4 screws
③ M310 (Dust prevention cover)

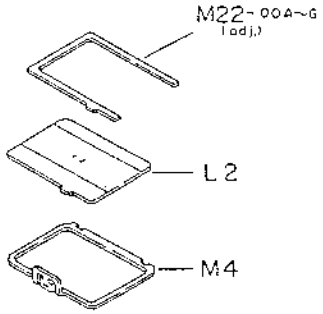


[Note of assembly]
Set 3 lead wires from K101(f-VR) to the side of O100(Finder LCD block).

☆ Refer to the "5. Flash block" on page 17 if necessary.

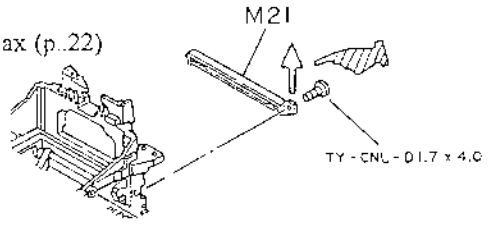
4-2 Fresnel lens (27230/27234-L2)

① Remove the hooking part of M4 (Fresnel lens retainer plate), set it at down position.
② L2, M22-00A ~ G(Focus adjusting washer)
③ TY-CNL-D1.7x4.0, M21 (Fresnel lens retainer plate holder), M4



[Note of assembly]
Hook M4 into M21, and then install M21 as shown in the diagram.

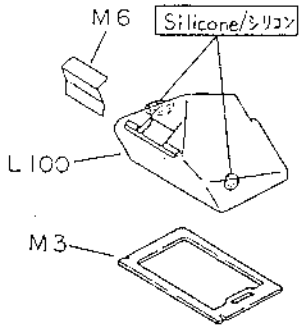
【 ADJ/CONFIRMATION 】 8. Viewfinder focus and Parallax (p..22)
Standard of viewfinder focus: ± 0.07 mm
Parallax: Right/Left 1° or less
Top/Bottom 1° 50′ or less



4-3 L100 (Penta mirror assy.)

① To remove L100, remove silicone by using a cutter.
② M3 (Finder mask)

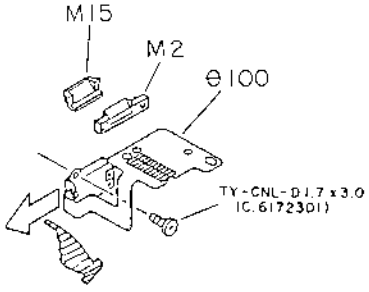
[Note of assembly]
Apply silicone to the places as shown in the diagram right.
And a silicone at O100 (Finder LCD block) side should be a smaller quantity than the other.
Leave them until they become hard.



4-4 O100 (Finder LCD block)

① 1 screw
② M2 (Display prism)
③ M15 (Display prism holder)

[Note of assembly]
Install O100 as shown in the diagram right.



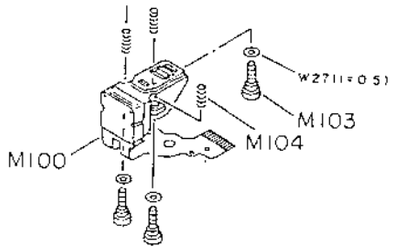
4-5 M100 (AF module)

【 Required equipment 】 Hexagonal driver 1.5mm (HD-M1.5)

① M103 x3 (...adjusting screw)

② W27(t=0.5) x3

③ M104 x3 (AF module spring)



[Note of assembly]

【 Adjustment 】 : AF module temporary position

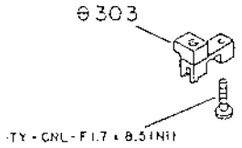
Screw in each M103 until it stops,
then screw back 1.5 turns.

☆ Apply bond to the head of M103
after adjusting the position by
using a computer.

4-6 *Non ponorama model only:

27234-O303 (Cover frame)

① TY-CNL-F1.7x8.5(Ni)



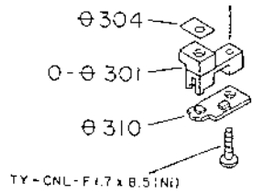
*Panorama model only:

27230-0-O301 (P indication lens block)

① TY-CNL-F1.7x8.5(Ni)

② O310 (P indication P.C. board)

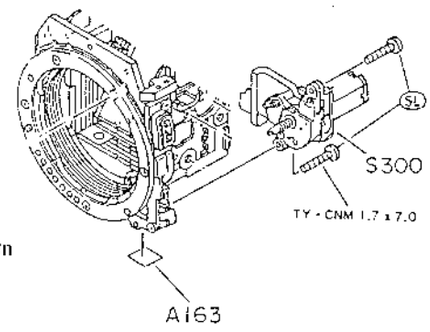
③ 0-O301, O304 (P indication lens cover)



4-7 S300 (AF motor block)

① Peel off a black tape on the Mirror motor,
and make lead wires of S300 free.

② 2 screws

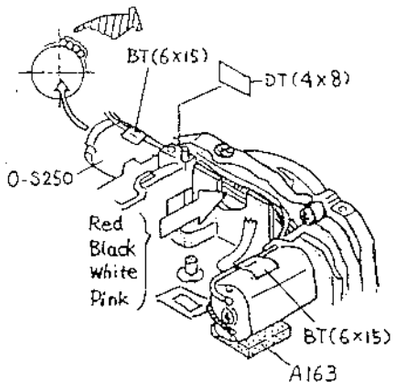


[Note of assembly]

☆ Make sure that A163 (Motor spacer) sticks as shown
in the diagram right.

☆ Apply the screw lock agent to the screws.

☆ Arrange 4 lead wires with BT(6x15) and DT(4x8) as
shown in the diagram right.



【 ADJ/CONFIRMATION 】 9. AF joint stroke (p.22)

AF joint pin height: 1.3 mm or above

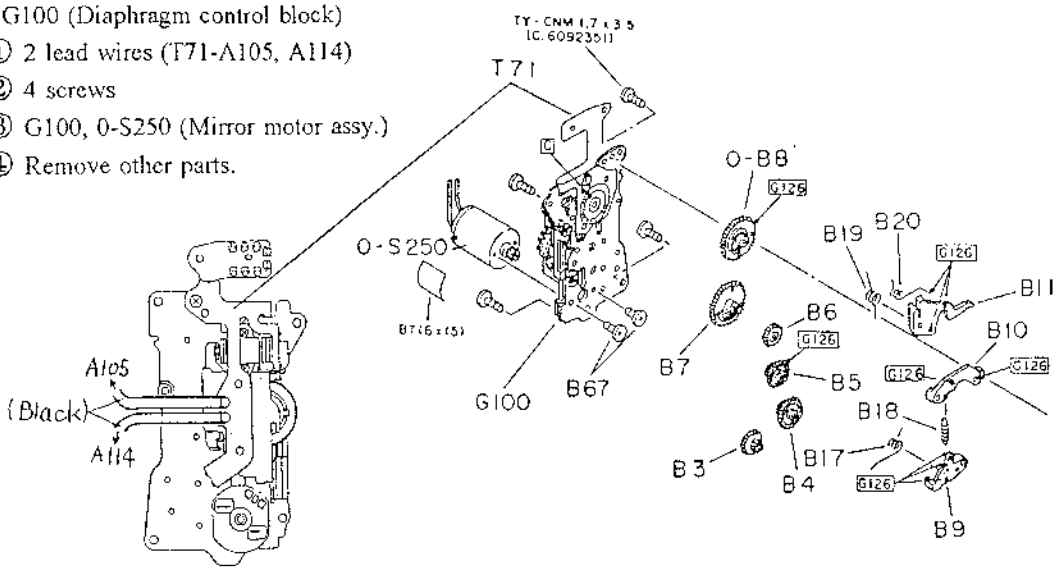
4-8 G100 (Diaphragm control block)

① 2 lead wires (T71-A105, A114)

② 4 screws

③ G100, 0-S250 (Mirror motor assy.)

④ Remove other parts.



[Note of assembly]

❶ Apply G126 to 9 shafts of the housing.

❷ Hold the shaft part of mirror seat assy. between B11(Mirror drive lever) and B20 (...restitution spring).

❸ Moving B9 (...set lever) down, install B7 (...charge cam).

❹ Aligning both positioning holes with B7 and 0-B8(...drive cam assy.), install 0-B8 as shown in the diagram ⓐ.

❺ Apply G126 a little to the larger gear section of B5 (...gear C).

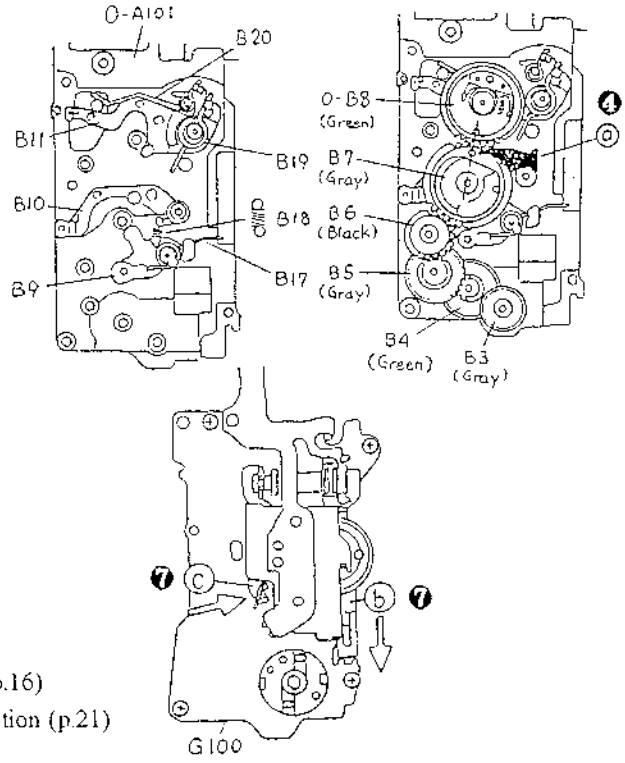
❻ Clean the contact lands of T71 using with contact cleaner.

❼ Pushing down the sliding plate (ⓑ), push in latch lever (ⓒ) to hold the sliding plate, and then install G100.

❽ Solder 2 lead wires (black) on T71.

【 Confirmation 】 Mirror function check (p.16)

【 ADJ/CONFIRMATION 】 7. Mirror position (p.21)



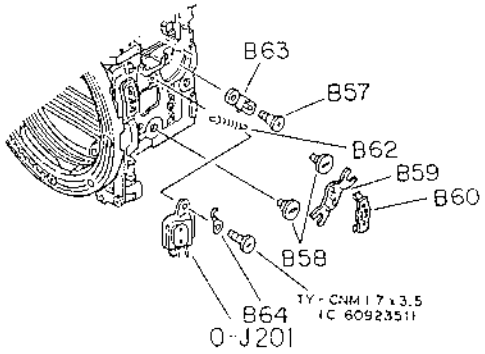
4-9 0-B52 (Mirror sheet)

① 1 screw, B64 (Spring hook plate), 0-J201 (TTL flash photo sensor)

② B62 (2nd mirror actuating spring)

③ B57, B63 (...lever shaft, ...lever)

(Continued)



④ B66 (Mirror hinge shaft)

☆ Remove a bond between 0-B52 and B66 by using a cutter first, and pull out B66 from the housing.

⑤ 0-B52

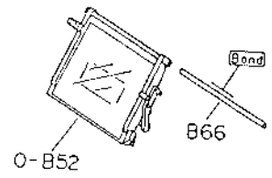
☆ Remove the 2nd mirror shaft part of 0-B52 first, and remove 0-B52.

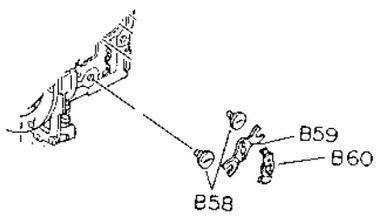
⑥ B60 (Plate retainer)

☆ Remove the hooking part of B60 from inside the housing first.

⑦ B59 (Seat receptacle retainer plate)

⑧ Apply the solvent a little onto two B58's (Mirror-seat receptacle) to soften the glue before remove B58.



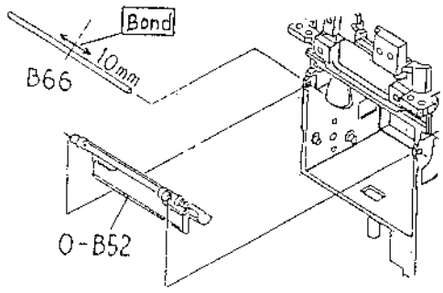


[Note of assembly]

❶ Install the 2nd mirror shaft part of 0-B52 first, and install 0-B52.

❷ Hold 0-B52 at the mirror up position, and install B66 into the housing and 0-B52 with equalizing both sides of B66.

❸ Apply a bond at the middle of B66.



4-10 27234-A104 (Mount ring)

☆ If disassembling the mount ring of Z-70P (27230), refer to the Exploded illustration on 27230 parts list (Fig.3).

① 5 screws: 27234-A119 (Mount ring retainer screw B)
-beside Flash pop-up button
TY-CNL-E2.0x4.5 x4

② Lift up A104 (Mount ring).

-1. 0-A108 (Mount lock guide plate)/27234-A115, A110 (...plate spring), A114 (Lug plate)

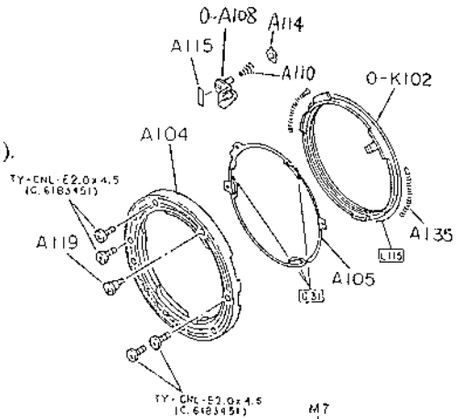
-2. A105 (Mount spring) with a black wire, 0-K102, A135 x2

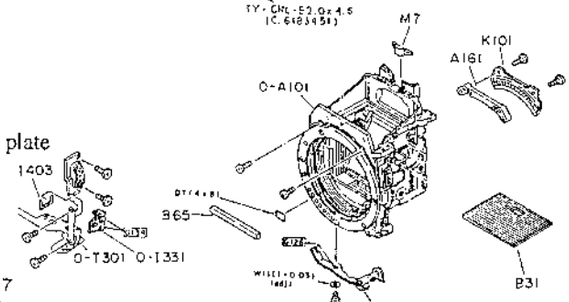
③ 0-A121 (Joint lever assy.)
A123 (... screw), W11 (0.03/adj.)

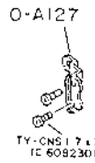
④ 4 screws on the release socket and AF mode SW plate
27234-A104, 0-T301 (Mount P.C.board)/I403, 27234-A126 (Connector pin plate), Connector pins and springs

⑤ 27234-0-A127 (Mount lock ...base assy.)
2 screws

Other parts
Front housing unit
A161, K101, 27234-B31, B65, M7

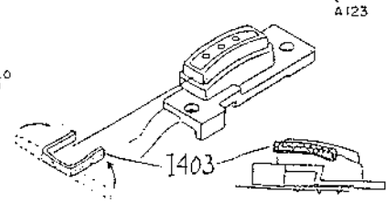




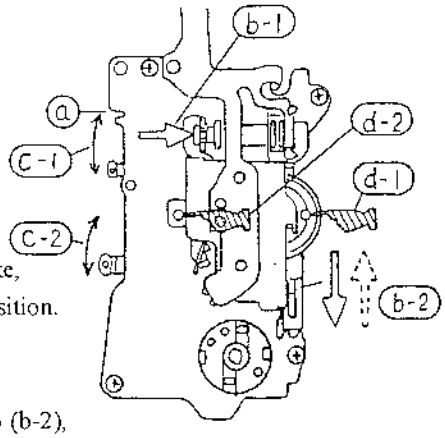


[Note of assembly]

Install I403 (Light seal) as shown in the diagram right.



【 Confirmation 】 Mirror function check



【 Required equipment 】 Regulated DC power supply

① Apply DC 1.5V to the mirror motor.
(The red wire should be connected a positive terminal(+).)
Set B10 (Shutter charge lever) at the top end of stroke(ⓐ).
→ Mirror up condition
-1. Check the function of the mirror sheet by using a finger.
-2. Keeping away the mirror sheet at the bottom end of stroke, make sure that the mirror sheet returns to the top end position.

② Push the lever of G100 (b-1) to release the latch lever.
And push down the sliding lever to the bottom end and let go (b-2), it should return to the original top position by the spring tension.

③ Apply DC to the mirror motor, and check the movement strokes of the mirror driving lever (c-1) and the shutter charge lever (c-2).

④ Apply DC to the mirror motor, set the hole of white gear as shown in the diagram (d-1) and set the position of the gear's hole as shown in the diagram (d-2).
→ Wind completed condition

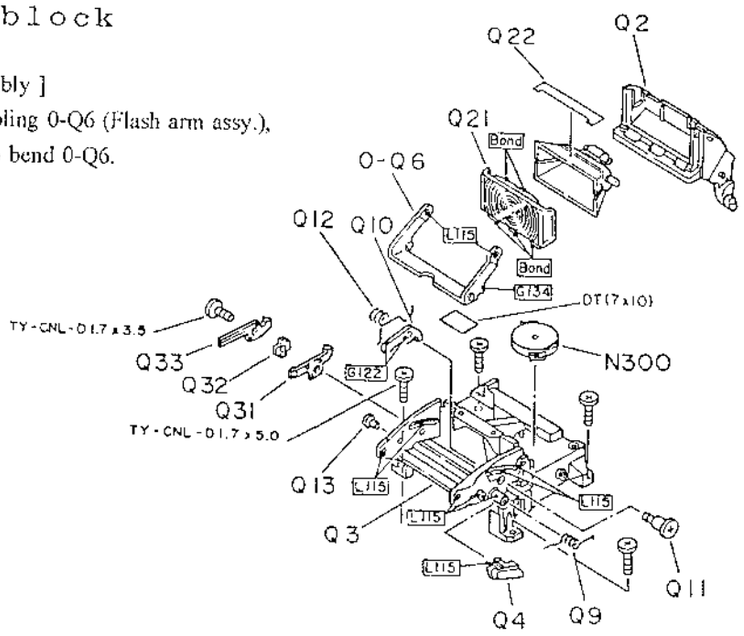
⑤ At the wind completed condition, when pushing up the 1st and 2nd mirror each to 3 mm and let go, each mirror should return to the original position.

☆ Set the Front housing block to the wind completed condition when installing the block to the main unit.

5. Flash block

[Note of disassembly]

When disassembling 0-Q6 (Flash arm assy.), be careful not to bend 0-Q6.



[Note of assembly]

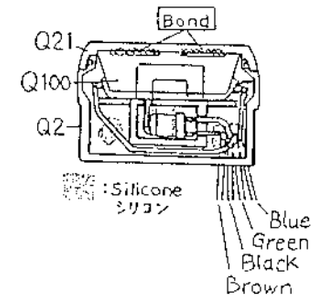
Flash reflector part: Q2 (Flash frame), Q21 (Diffuser), Q100 (Flash assy.)

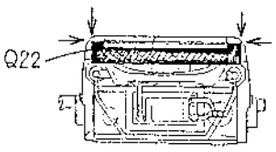
❶ Clip Q21 into the reflector and fix them with the bond.

❷ Install Q21 to Q2, and arrange lead wires and the trigger coil as shown in the diagram .

❸ Apply silicone to the place as shown in the diagram.

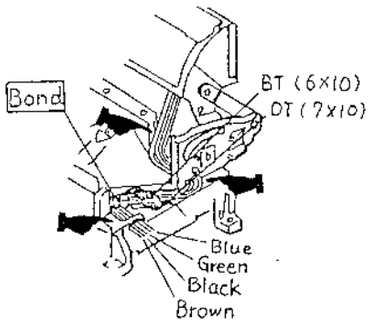
❹ Install Q22 (Flash insulation tape) at the position as shown in the diagram right.





Arrangement of lead wires from Q100

Arrange the lead wires with not twisted, and fix them with DT(7x10), BT(6x10) and the bond as shown in the diagram right.
When popped-up the flash, make sure that the lead wires do not have any stress.



[Confirmation] Flash checking

❶ When the flash is pushed down, it should be firmly locked.

❷ When Flash button is pressed, flash is unlocked and popped-up smoothly.

❸ Check flash switch (Q31,Q33) ON/OFF:

— SW ON when popped-up

— SW OFF when retracted: SW clearance should be 0.3 mm.

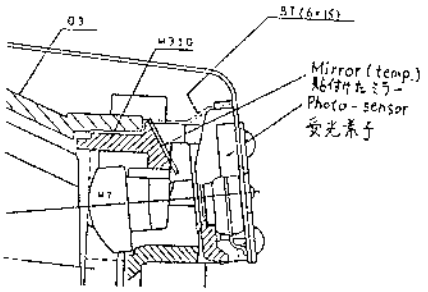
1. PHOTO SENSOR POSITION

【 Required equipment 】 : 27020-A139 (Reflex mirror) or equivalent
Pen light (with stronger light) or equivalent

1-1 Remove the retainer screw on the LCD unit, and remove BT(6x15) on the top of photo sensor.

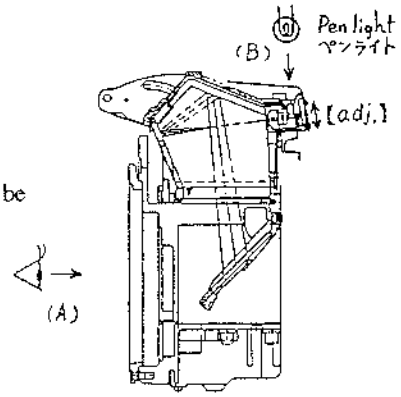
1-2 Cover the eyepiece with a black tape.

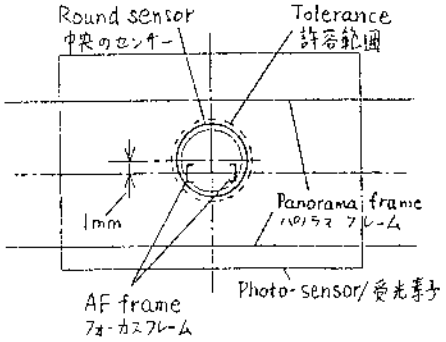
1-3 Put a mirror (with double-stick tape) on the slant of M310 (Eyepiece frame) as shown in the diagram right.



1-4 Strike light by a pen light (B) to the photo sensor as shown in the diagram right, and search the position where the round pattern of the photo sensor can be seen on the mirror from the mount side (A).

1-5 【 Confirmation 】 : Confirm the round sensor in which should be positioned in the tolerance as shown in the diagram right.

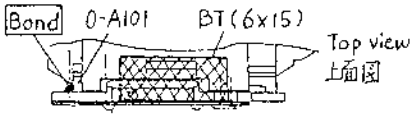


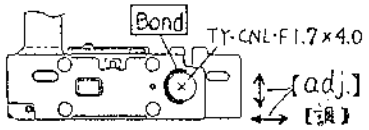


1-6 【 Adjustment 】 : Loosen TY-CNL-F1.7x4.0 and move the entire photo sensor for the positioning adjustment.

1-7 After adjustment is done, tighten the screw and confirm the position again. Then apply the bond to fix the photo sensor as shown in the diagram.

1-8 Remove the mirror from M301, and reinstall BT(6x15) and the LCD unit.





2. FLASH CHECK

2-1 【 Confirmation 】 Flash check

① Set the flash to the pop-up condition and cover the firing section.

② Install the black body mount cap to the body.

(Above settings are needed to check at the condition totally dark.)

③ Release the shutter when the flash ready mark comes up, and confirm the flash fires.

2-2 【 Confirmation 】 Preflash check (Red-eye reduction flash function)

① Turn the select dial while depressing the flash reduction button until the eye mark appears on.

② When release the shutter, preflash will fire before running the 1st shutter curtain .

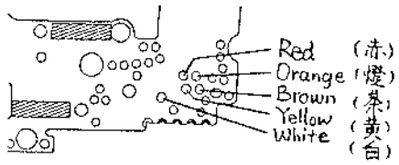
And then, main flash will fire during exposure.

3. ADJUSTMENT AND CHECK WITH COMPUTER PROGRAM (AE and AF)

【 Required equipment 】 : Program software for 27230, Personal computer, Color display, Serial interface, Regulated DC power supply or battery(2CR5), Power SW adapter, Shutter tester (7PE-25A3, EF-5000/8000 type), Light measuring master lens for LX, Diaphragm F8 setting ring K, TTL adjusting back cover for 26900, Optical regulator for MEF, Focus master lens for MEF, Focus master lens for MEF, Hexagonal screw driver 1.5 mm, CCD positioning jig (Circle: for 27230, Cross: for 25900)

3-1 Solder 5 lead wires from the interface.

3-2 Apply the power to the body, and install the power SW adapter to the release socket.



3-3 Using 27230 programmed software, check and adjust by following the flow chart on page 23.

↓①EEPROM CHECKING (START): Checking Standard data and Adjustment data.

↓②EXPOSURE ADJUSTMENTS (A group): Adjusting AE, TTL flash QS and related adjustments.

↓③AF AND RELATED ADJUSTMENTS (B group): Adjusting AF and related adjustments.

↓④NUMBER OF REPAIRS: Checking and adding the number of repair times.

↓⑤EEPROM CHECKING (END): Checking Standard data and Adjustment data at end of program.

4. EXPOSURE VALUE AND DX SWITCHING

【 Required equipment 】 : Shutter tester (7PE-25A3, EF-8000, EF-5000 type)
Master lens for 24500

4-1 【 Confirmation 】 Exposure value

① Set the battery to the body.

② Attach the master lens to the body, and set the diaphragm ring to "A".

③ Set the main SW to ON, Focus mode SW to MF.

④ Open the back cover, and push the back cover key (0-A4) to set the SW on.

⑤ Set the body to the shutter tester and check the exposure value.

【 Standard 】

Using Master lens for 24500 (ML-245)

LV6 to 13	−0.50 to +0.70
LV14	−0.25 to +0.95
LV15	±0.0 to +1.20

※ Check at other exposure modes if necessary.

4-2 【 Confirmation 】 DX switching

① Load a DX coded film. (ISO400, 200, 100, etc.)

② Check ISO setting (the film speed will appear on the LCD panel) by loading a different type of film.

※ Loading ISO 5000 DX film (handmade) can be checked conductivity of the all contacts.

5. AUTO FOCUS AND POWER ZOOM CHECK

【 Required equipment 】 : Optical regulator for MEF
Focus master lens for MEF
FA zoom lens

5-1 【 Confirmation 】 : Autofocus (FI:focus indicator)

① Attach the focus master lens to the body. Set the focus mode SW to MF.
Set the body in front of the 500 mm collimator of the optical regulator.

② Turn the focusing ring to the right end, and then gradually return the focusing ring to the position where the in-focus mark appears, and read the scale; A.

③ Turn the focusing ring to the left end, and then return the focusing ring in the same manner, and read the scale; B.

④ Center point of A and B — (A+B)/2 — should be within a range of -0.05 to +0.06 mm.

5-2 【 Confirmation 】 : Focus mode
Attach the FA zoom lens to the body, set the focus mode SW to AF,
and confirm the AF functions and switching of AF and MF.

5-3 【 Confirmation 】 : Power zoom
Confirm the power zoom functions.

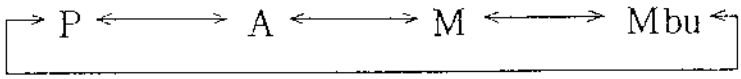
6. FUNCTION CHECK

【 Required equipment 】 : FA lens, Test film

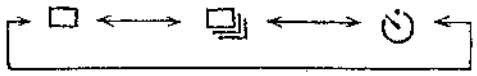
6-1 Set the battery to the body.

6-2 【 Confirmation 】 : Main SW and Auto/Manual switching
Attach the FA lens to the body, and set the main SW to ON.
Change the diaphragm ring from manual stop to "A", then confirm the LCD showing exposure mode "P".

6-3 【 Confirmation 】 : Mode button and Select dial
Turning the select dial while depressing the mode button, make sure that the exposure mode will change accordingly as shown below.

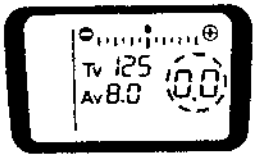


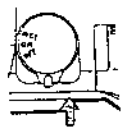
6-4 【 Confirmation 】 : Drive button
Turning the select dial while depressing the drive button, make sure that the drive mode will change accordingly as shown below.



6-5 【 Confirmation 】 : Hyper button, Exposure compensation and Tv/Av button

☆ Set the exposure mode "P" or "A".





① The compensation value (0.0) and bar graph will be displayed on the LCD when depressing the Hyper button.

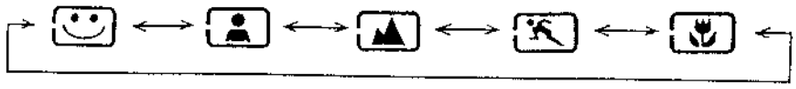
② By turning the select dial while holding down the Hyper button, the value will be select.

③ By depressing the Tv/Av button while holding down the Hyper button, the value will be reset to 0.0 (Ev).

(Continued)

6-6 【 Confirmation 】 : Picture mode (PICT)

Set the main SW to "PICT". Turning the select dial while holding down the mode button, the picture mode will change accordingly as shown below.



6-7 【 Confirmation 】 : Back cover SW, Film winding/rewinding

☆ Load a test film.

① Close the back cover, then the film will advance to the first frame. At the sametime, the film counter will change "0" to "1".

② Release shutter several times and confirm film advance and counter change.

③ Depress the rewind button, make sure that the rewinding of film will start.

6-8 【 Confirmation 】 : Panorama mechanism (for Panorama model only)

Set the body to the panorama format, and confirm the "P" indicator lights up in the upper left of the view-finder while depressing the shutter release button halfway.

Open the back cover, and make sure that the top and bottom panorama curtains on the shutter-block come out inside the aperture of the body.

7. 1ST AND 2ND MIRROR POSITION

【 Required equipment 】 : Optical regulator for MEF
Mirror angle adjusting jig for 26900

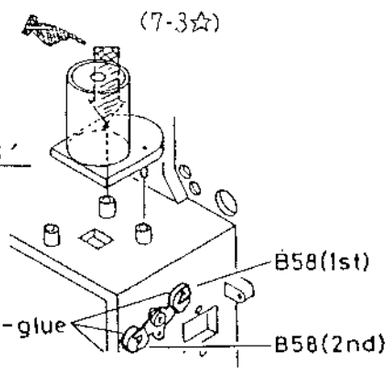
7-1 Set the mirror housing block to the optical regulator.

☆ Make sure that the finder and related parts should be removed from the housing block to check the 1st mirror position.

7-2 【 Adj/Confirmation 】 : Make sure that a laser beam should be seen on the screen of optical regulator within the tolerance below.

【 Tolerance 】 X-axis of 1st mirror position : ± 15 ′
X-axis of 2nd mirror position and Y-axis : ± 5 ′

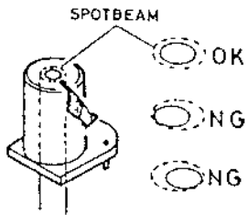
Adjust Y-axis of 1st and 2nd mirror positions by moving the mirror seat receptacle (B58).



7-3 As shown in the diagram, when the Mirror angle adjusting jig is set on the Front housing, a laser beam can be seen near the 1 mm hole of the jig.

【 Attention!!! 】 : Be careful not to look laser beam directly to prevent your eyes from being trouble.

☆ This jig has a small amount of play forward and backward. Make sure that the jig is held at the position indicated by the arrow (⇩), by using tweezers or similar tool, when the beam position is checked.



7-4 【 Adjustment 】 : Move B58 (for 2nd mirror) to adjust the laser beam to the located at the center of the hole.

7-5 【 Confirmation 】 : Move the mirror seat up and down several times. Make sure that the position of the laser beam stays the same.

7-6 After confirmation is done, apply super-glue to two B58's.

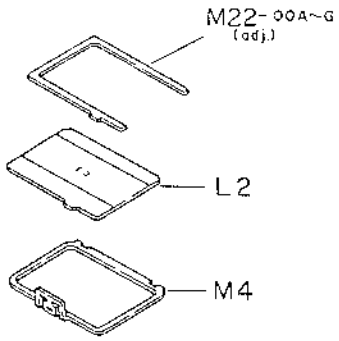
8. VIEWFINDER AND PARALLAX

【 Required equipment 】 : 1000 (or 500) mm collimator
Focus master lens

8-1 Install the eyepiece (L4, M301) temporarily.

8-2 【 Adjustment 】 : Unhook the hook section of M4 (...retainer plate), and replace the Focus adjusting washer A-G (M22-00A to -00G) to adjust viewfinder focus.

Standard: 0 ± 0.07 mm



8-3 【 Confirmation 】 Parallax confirmation

Standard Right/Left: 1° or less
Top/Bottom: 1° 50′ or less

9. AF JOINT STROKE

【 Required equipment 】 : Vernier calipers

9-1 Set the focus mode SW to "AF".

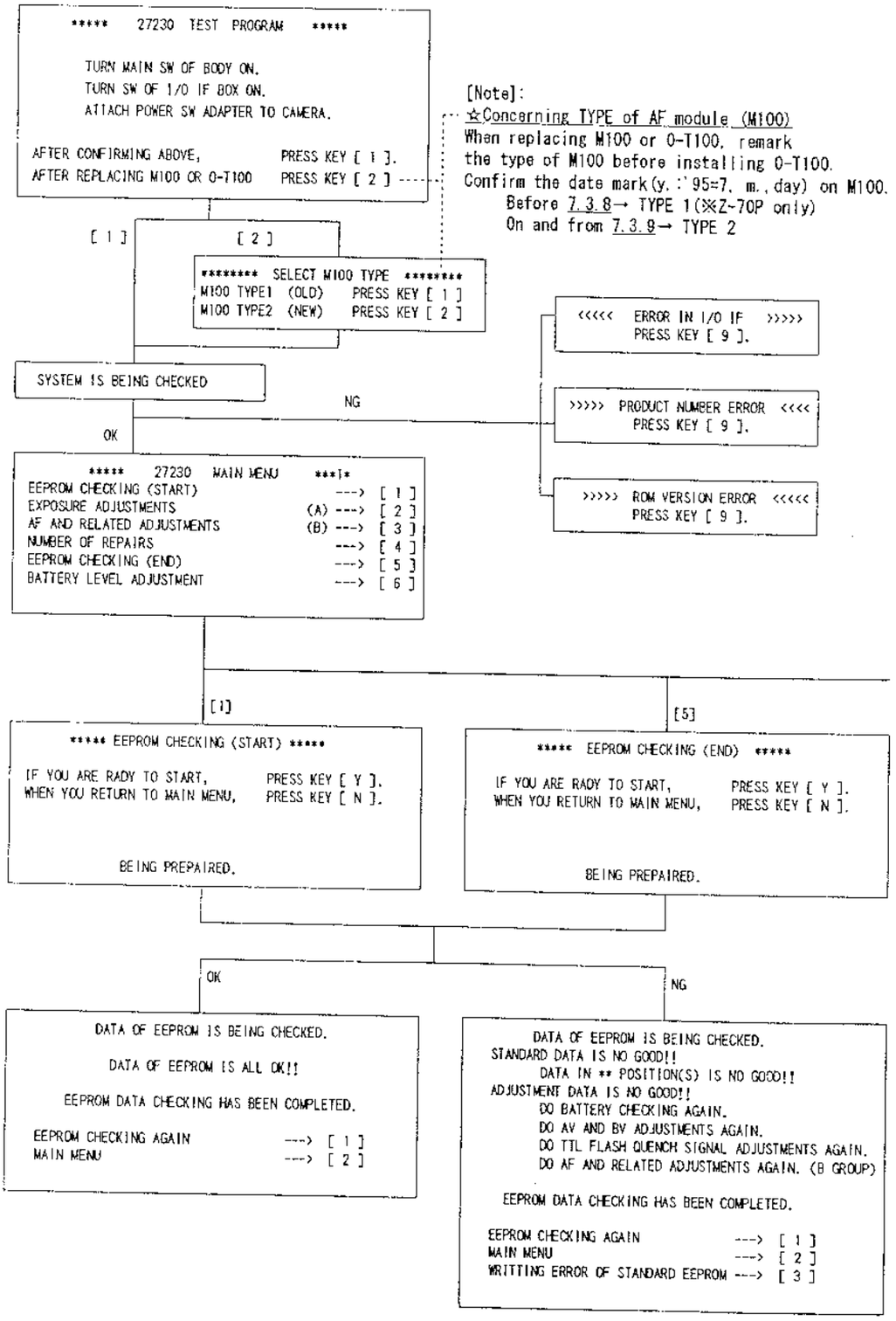
9-2 【 Confirmation 】 : when the mount lock button is not pressed, the AF coupler of AF motor should project from the mount surface by 1.3 mm or more.

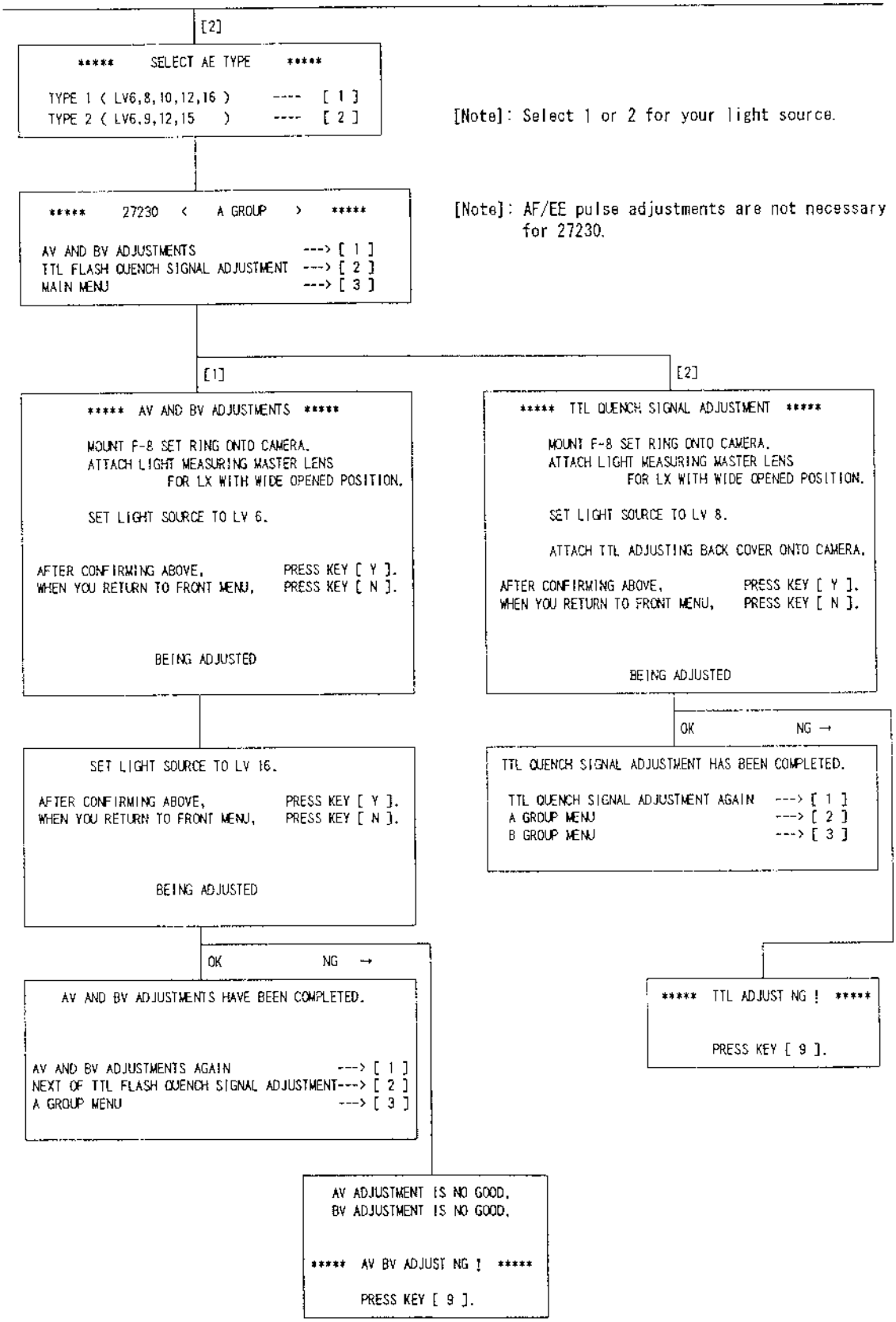
9-3 【 Confirmation 】 : When the mount lock button is pressed and released the mount lock pin comes to mount urface, the AF coupler should not project out of mount surface.

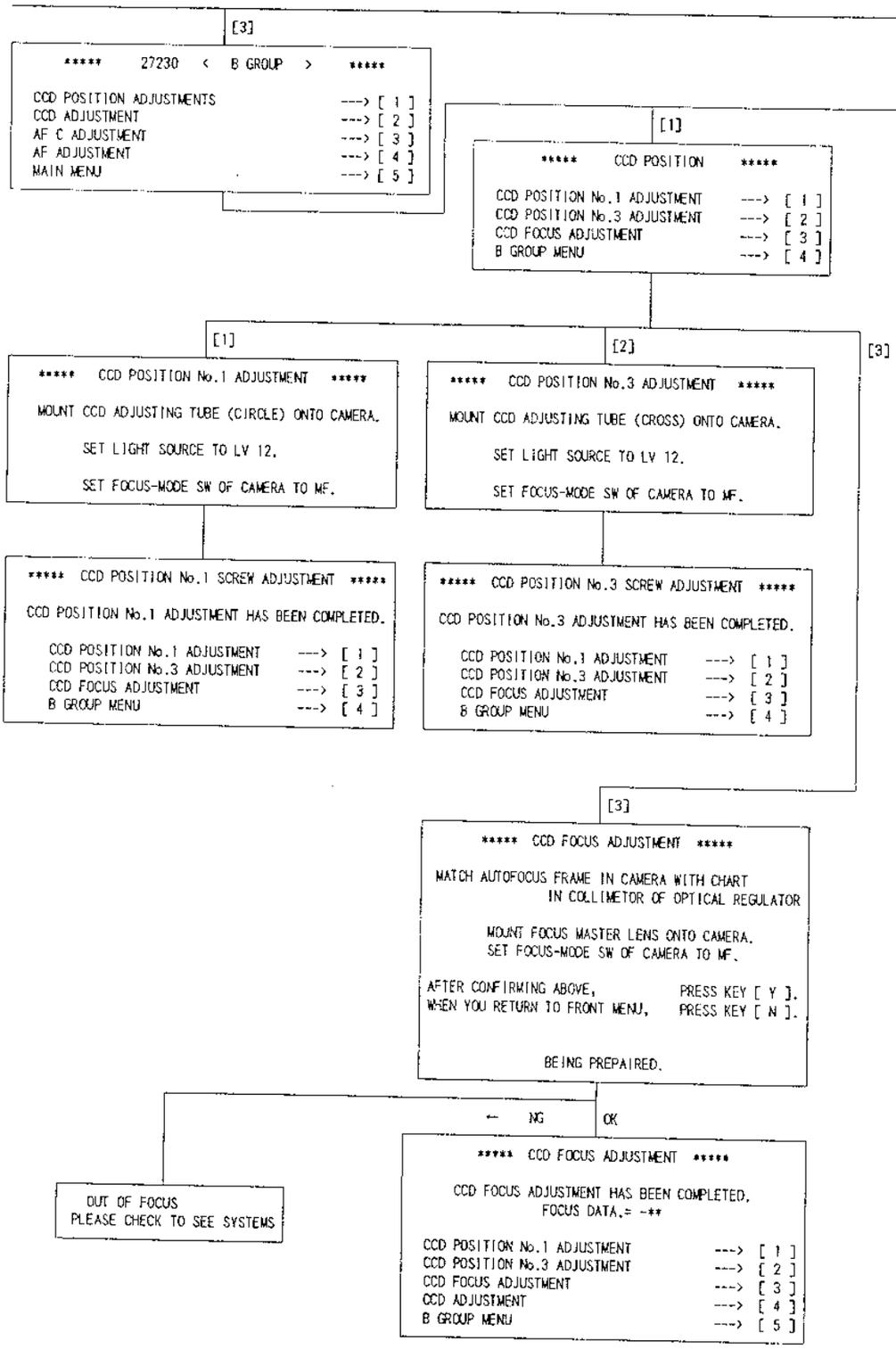
9-4 【 Adjustment 】 : Turn an eccentric screw on the Mount lock ... plate assy.(27234-A127/27230-A126), and apply the screw-lock agent to the screw when the adjustment was done.

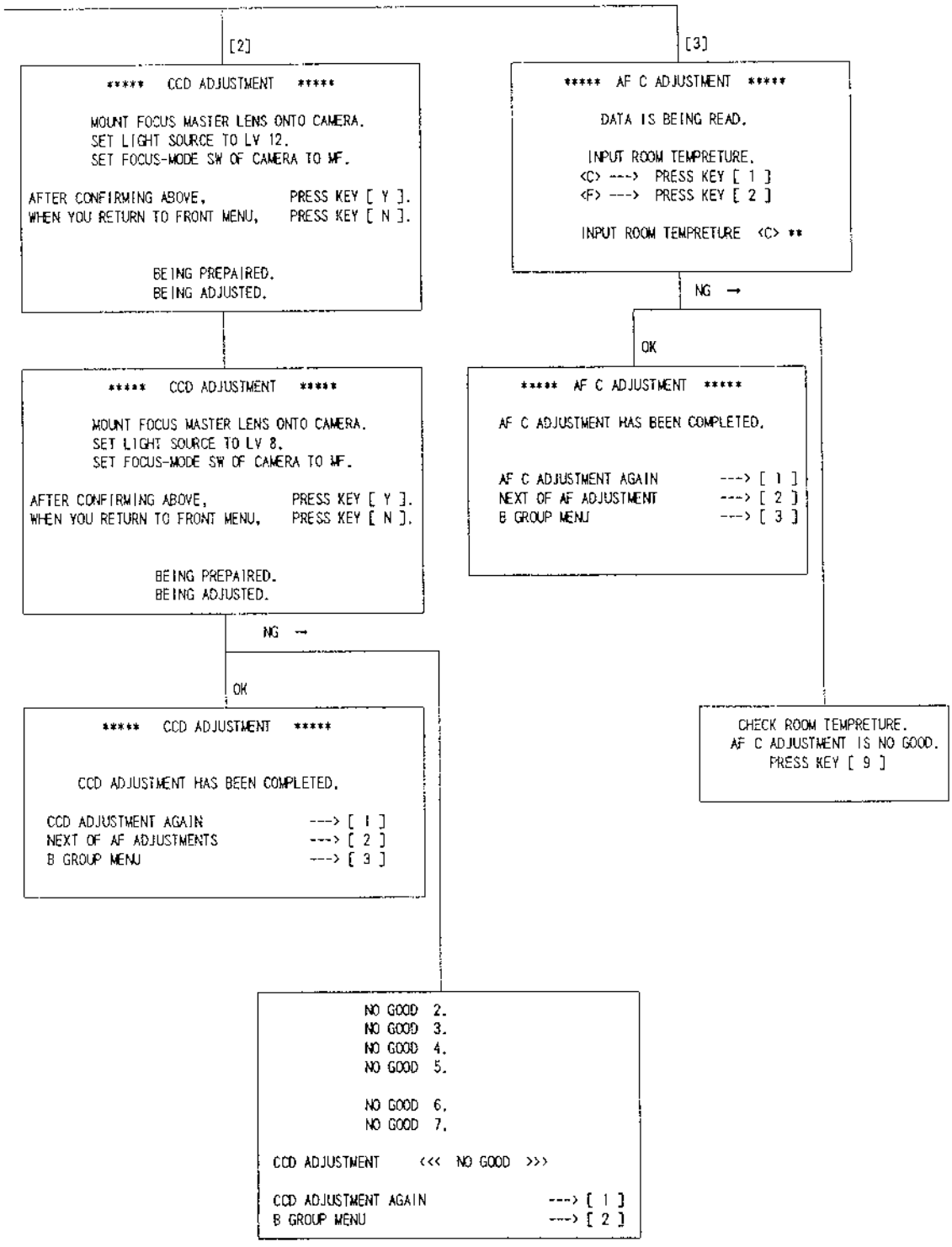
9-5 【 Confirmation 】 When the mount lock button is pressed and released, the Joint lever (0-A121) should be moved smoothly.

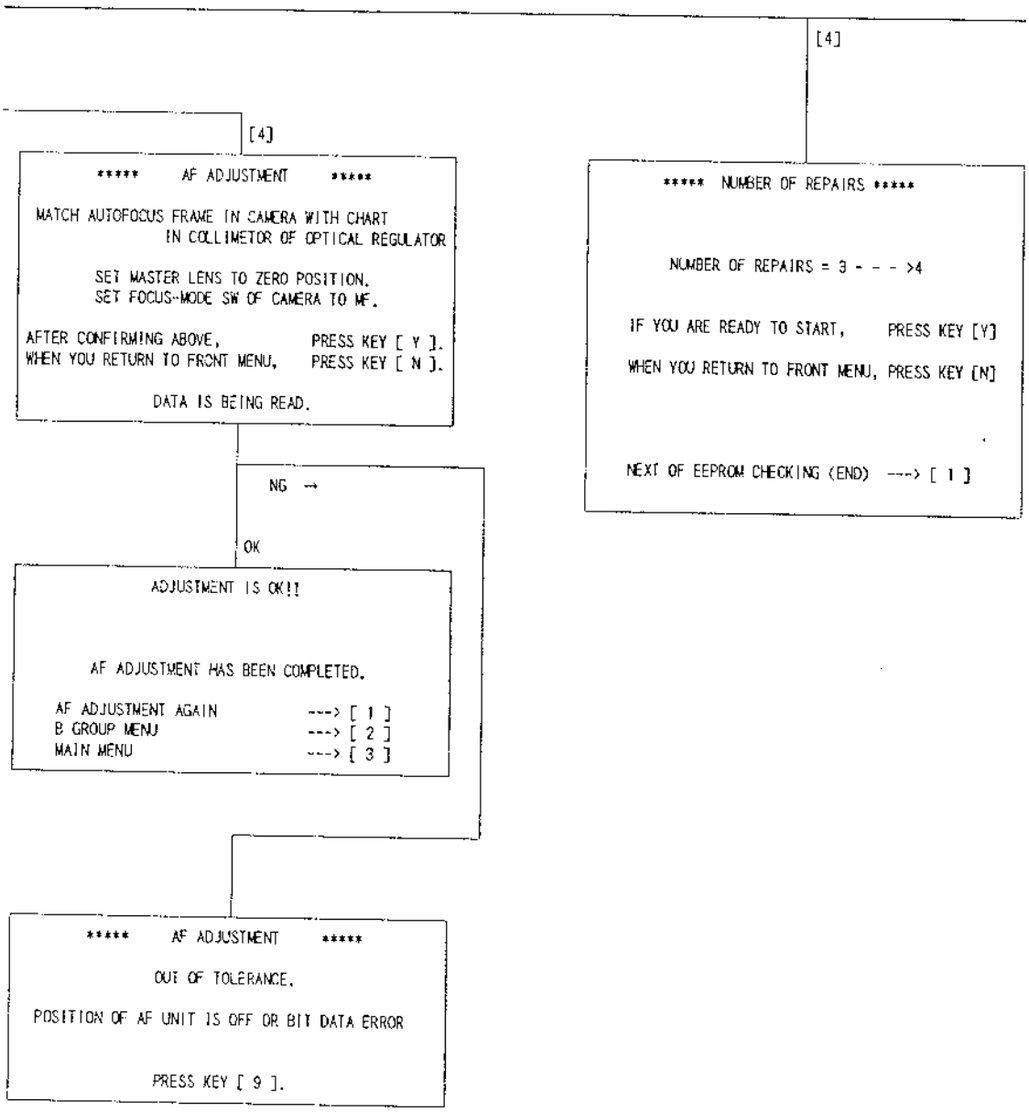
【27230 PROGRAM SOFTWARE FLOW CHART】

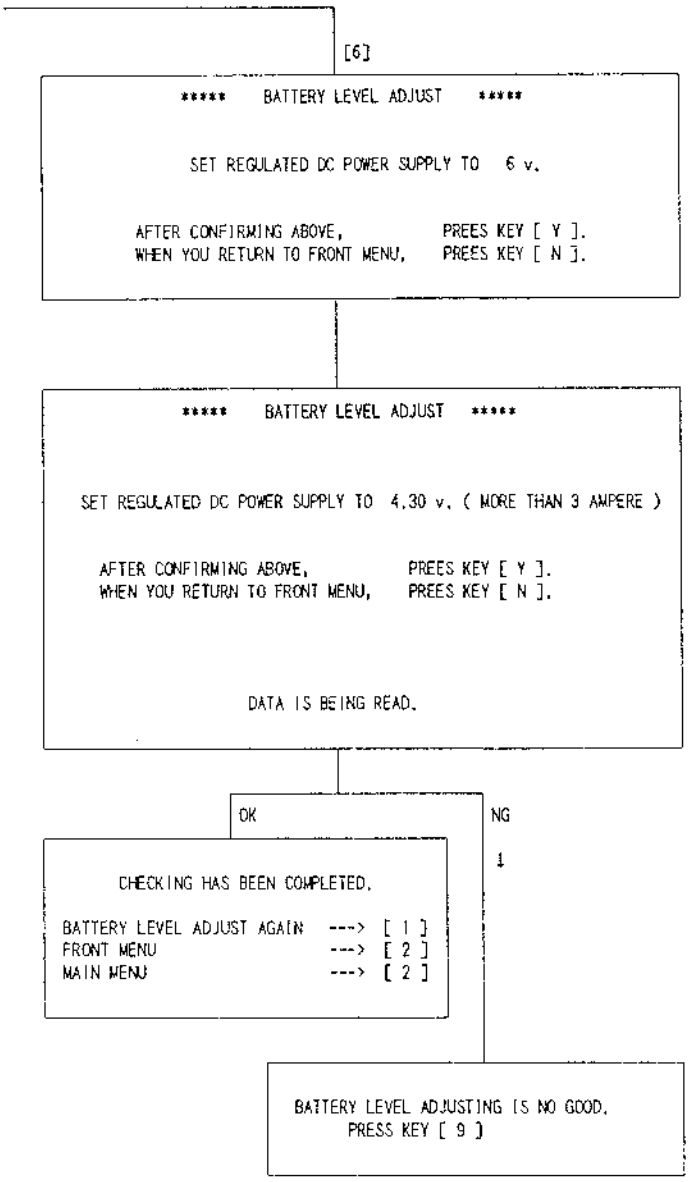



[2]
***** SELECT AE TYPE *****
TYPE 1 (LV6,8,10,12,16) ---- [1]
TYPE 2 (LV6,9,12,15) ---- [2]
[Note]: Select 1 or 2 for your light source.
***** 27230 < A GROUP > *****
AV AND BV ADJUSTMENTS ---> [1]
TTL FLASH QUENCH SIGNAL ADJUSTMENT ---> [2]
MAIN MENU ---> [3]
[Note]: AF/EE pulse adjustments are not necessary for 27230.
[1]
[2]
***** AV AND BV ADJUSTMENTS *****
MOUNT F-8 SET RING ONTO CAMERA.
ATTACH LIGHT MEASURING MASTER LENS
FOR LX WITH WIDE OPENED POSITION.
SET LIGHT SOURCE TO LV 6.
AFTER CONFIRMING ABOVE, PRESS KEY [Y].
WHEN YOU RETURN TO FRONT MENU, PRESS KEY [N].
BEING ADJUSTED
***** TTL QUENCH SIGNAL ADJUSTMENT *****
MOUNT F-8 SET RING ONTO CAMERA.
ATTACH LIGHT MEASURING MASTER LENS
FOR LX WITH WIDE OPENED POSITION.
SET LIGHT SOURCE TO LV 8.
ATTACH TTL ADJUSTING BACK COVER ONTO CAMERA.
AFTER CONFIRMING ABOVE, PRESS KEY [Y].
WHEN YOU RETURN TO FRONT MENU, PRESS KEY [N].
BEING ADJUSTED
SET LIGHT SOURCE TO LV 16.
AFTER CONFIRMING ABOVE, PRESS KEY [Y].
WHEN YOU RETURN TO FRONT MENU, PRESS KEY [N].
BEING ADJUSTED
OK NG →
AV AND BV ADJUSTMENTS HAVE BEEN COMPLETED.
AV AND BV ADJUSTMENTS AGAIN ---> [1]
NEXT OF TTL FLASH QUENCH SIGNAL ADJUSTMENT---> [2]
A GROUP MENU ---> [3]
AV ADJUSTMENT IS NO GOOD.
BV ADJUSTMENT IS NO GOOD.
***** AV BV ADJUST NG ! *****
PRESS KEY [9].
OK NG →
TTL QUENCH SIGNAL ADJUSTMENT HAS BEEN COMPLETED.
TTL QUENCH SIGNAL ADJUSTMENT AGAIN ---> [1]
A GROUP MENU ---> [2]
B GROUP MENU ---> [3]
***** TTL ADJUST NG ! *****
PRESS KEY [9].


[3]
***** 27230 < B GROUP > *****
CCD POSITION ADJUSTMENTS ---> [1]
CCD ADJUSTMENT ---> [2]
AF C ADJUSTMENT ---> [3]
AF ADJUSTMENT ---> [4]
MAIN MENU ---> [5]
[1]
***** CCD POSITION *****
CCD POSITION No.1 ADJUSTMENT ---> [1]
CCD POSITION No.3 ADJUSTMENT ---> [2]
CCD FOCUS ADJUSTMENT ---> [3]
B GROUP MENU ---> [4]
[1]
***** CCD POSITION No.1 ADJUSTMENT *****
MOUNT CCD ADJUSTING TUBE (CIRCLE) ONTO CAMERA.
SET LIGHT SOURCE TO LV 12.
SET FOCUS-MODE SW OF CAMERA TO MF.
[2]
***** CCD POSITION No.3 ADJUSTMENT *****
MOUNT CCD ADJUSTING TUBE (CROSS) ONTO CAMERA.
SET LIGHT SOURCE TO LV 12.
SET FOCUS-MODE SW OF CAMERA TO MF.
[3]
***** CCD POSITION No.1 SCREW ADJUSTMENT *****
CCD POSITION No.1 ADJUSTMENT HAS BEEN COMPLETED.
CCD POSITION No.1 ADJUSTMENT ---> [1]
CCD POSITION No.3 ADJUSTMENT ---> [2]
CCD FOCUS ADJUSTMENT ---> [3]
B GROUP MENU ---> [4]
***** CCD POSITION No.3 SCREW ADJUSTMENT *****
CCD POSITION No.3 ADJUSTMENT HAS BEEN COMPLETED.
CCD POSITION No.1 ADJUSTMENT ---> [1]
CCD POSITION No.3 ADJUSTMENT ---> [2]
CCD FOCUS ADJUSTMENT ---> [3]
B GROUP MENU ---> [4]
[3]
***** CCD FOCUS ADJUSTMENT *****
MATCH AUTOFOCUS FRAME IN CAMERA WITH CHART
IN COLLIMETOR OF OPTICAL REGULATOR
MOUNT FOCUS MASTER LENS ONTO CAMERA.
SET FOCUS-MODE SW OF CAMERA TO MF.
AFTER CONFIRMING ABOVE, PRESS KEY [Y].
WHEN YOU RETURN TO FRONT MENU, PRESS KEY [N].
BEING PREPAIRED.
← NG
OK
OUT OF FOCUS
PLEASE CHECK TO SEE SYSTEMS
***** CCD FOCUS ADJUSTMENT *****
CCD FOCUS ADJUSTMENT HAS BEEN COMPLETED.
FOCUS DATA.= -**
CCD POSITION No.1 ADJUSTMENT ---> [1]
CCD POSITION No.3 ADJUSTMENT ---> [2]
CCD FOCUS ADJUSTMENT ---> [3]
CCD ADJUSTMENT ---> [4]
B GROUP MENU ---> [5]


[2]
***** CCD ADJUSTMENT *****
MOUNT FOCUS MASTER LENS ONTO CAMERA.
SET LIGHT SOURCE TO LV 12.
SET FOCUS-MODE SW OF CAMERA TO MF.
AFTER CONFIRMING ABOVE, PRESS KEY [Y].
WHEN YOU RETURN TO FRONT MENU, PRESS KEY [N].
BEING PREPAIRED.
BEING ADJUSTED.
***** CCD ADJUSTMENT *****
MOUNT FOCUS MASTER LENS ONTO CAMERA.
SET LIGHT SOURCE TO LV 8.
SET FOCUS-MODE SW OF CAMERA TO MF.
AFTER CONFIRMING ABOVE, PRESS KEY [Y].
WHEN YOU RETURN TO FRONT MENU, PRESS KEY [N].
BEING PREPAIRED.
BEING ADJUSTED.
NG →
OK
***** CCD ADJUSTMENT *****
CCD ADJUSTMENT HAS BEEN COMPLETED.
CCD ADJUSTMENT AGAIN ---> [1]
NEXT OF AF ADJUSTMENTS ---> [2]
B GROUP MENU ---> [3]
NO GOOD 2.
NO GOOD 3.
NO GOOD 4.
NO GOOD 5.
NO GOOD 6.
NO GOOD 7.
CCD ADJUSTMENT <<< NO GOOD >>>
CCD ADJUSTMENT AGAIN ---> [1]
B GROUP MENU ---> [2]
[3]
***** AF C ADJUSTMENT *****
DATA IS BEING READ.
INPUT ROOM TEMPRETURE.
<C> ---> PRESS KEY [1]
<F> ---> PRESS KEY [2]
INPUT ROOM TEMPRETURE <C> **
NG →
OK
***** AF C ADJUSTMENT *****
AF C ADJUSTMENT HAS BEEN COMPLETED.
AF C ADJUSTMENT AGAIN ---> [1]
NEXT OF AF ADJUSTMENT ---> [2]
B GROUP MENU ---> [3]
CHECK ROOM TEMPRETURE.
AF C ADJUSTMENT IS NO GOOD.
PRESS KEY [9]


[4]
***** AF ADJUSTMENT *****
MATCH AUTOFOCUS FRAME IN CAMERA WITH CHART
IN COLLIMETOR OF OPTICAL REGULATOR
SET MASTER LENS TO ZERO POSITION.
SET FOCUS-MODE SW OF CAMERA TO MF.
AFTER CONFIRMING ABOVE, PRESS KEY [Y].
WHEN YOU RETURN TO FRONT MENU, PRESS KEY [N].
DATA IS BEING READ.
NG →
OK
ADJUSTMENT IS OK!!
AF ADJUSTMENT HAS BEEN COMPLETED.
AF ADJUSTMENT AGAIN ---> [1]
B GROUP MENU ---> [2]
MAIN MENU ---> [3]
***** AF ADJUSTMENT *****
OUT OF TOLERANCE.
POSITION OF AF UNIT IS OFF OR BIT DATA ERROR
PRESS KEY [9].
[4]
***** NUMBER OF REPAIRS *****
NUMBER OF REPAIRS = 3 - - - >4
IF YOU ARE READY TO START, PRESS KEY [Y]
WHEN YOU RETURN TO FRONT MENU, PRESS KEY [N]
NEXT OF EEPROM CHECKING (END) ---> [1]


[6]
***** BATTERY LEVEL ADJUST *****
SET REGULATED DC POWER SUPPLY TO 6 v.
AFTER CONFIRMING ABOVE, PREES KEY [Y].
WHEN YOU RETURN TO FRONT MENU, PREES KEY [N].
***** BATTERY LEVEL ADJUST *****
SET REGULATED DC POWER SUPPLY TO 4.30 v. (MORE THAN 3 AMPERE)
AFTER CONFIRMING ABOVE, PREES KEY [Y].
WHEN YOU RETURN TO FRONT MENU, PREES KEY [N].
DATA IS BEING READ.
OK
NG
CHECKING HAS BEEN COMPLETED.
BATTERY LEVEL ADJUST AGAIN ---> [1]
FRONT MENU ---> [2]
MAIN MENU ---> [2]
BATTERY LEVEL ADJUSTING IS NO GOOD.
PRESS KEY [9]

☆ Exclusively used for Z-70/PZ-70

Item No.	Description
1.	Program software for 27230
2.	AF sensor positioning jig for 27230 (CIRCLE) (used in common with other AF-SLR: SF and Z series)

☆ Others (PC-98: PC-286, PC-386. PC/AT: IBM Compatible computer)

Item No.	Description	
3.	Personal computer	(for PC-98 or PC/AT)
4.	Color display	(for PC-98 or PC/AT)
5-1.	PC module board (PIO-24/24T)	(for PC-98)
5-2.	PC/AT module board (PIO-32/32 (PC))	(for PC/AT)
6-1.	DX interface cable (DXIC-P98)	(for PC-98)
6-2.	Interface cable PC/AT (PCA96PS)	(for PC/AT)
7.	Serial interface (SIFI-269)	
8.	Interface buffer (IFB-269)	
9.	Power SW adapter for AF-SLR	
10.	CCD positioning jig for 25900(SFX) (CROSS)	
11.	Collimator chart 25900 for optical regulator (OCRC-259)	
12.	Temporary back cover for 26900(Z-10) (TAB-269)	
13.	Mirror angle adjusting jig for 26900 (MAAJ-269)	
14.	Hexagonal driver 1.5mm (HD-M1.5)	
15.	Shutter tester (7PE-25A3, EF-5000, EF-8000)	
16.	Optical regulator for 24300(MEF)	
17.	Exposure master lens for 24500(Super A) (ML-245)	
18.	Diaphragm(F8) setting ring K (KA-0-1A)	
19.	Focus master lens for 25900(SFX) (ML-259)	
20.	Light measuring master lens for 24000(LX) (LML-240)	
21.	Dial gauge comparator	(PH-2)
22.	Block gauge	(229N-A01-A2)
23.	Mount block	(23600N -A1,A104-A)
24.	Mount block spacer	(23600N-A01,A104-A-A)
25.	Mount block holder for 259	(23600N-A01,A104-A-B)
26.	1000mm collimator	
27.	Regulated DC power supply	(capable current at least 3A)
28.	Circuit tester	

***Notice of order for testers, jigs and tools**

When ordering the above items, the description on your order may be regulated by "STILL CAMERA SERVICE TOOLS MASTER PROOF LIST" (refer to the Technical Information No.T-65) except goods such as the no mention on the list. Therefore, use the product No.95901, parts No. and the description that are exactly the same as the list for your order, refer to the order list on next page.

[ORDER LIST OF TESTERS, JIGS AND TOOLS FOR 27230]

Date: Aug.'95

Item No.(see left page)	Description of order	[Order No.] Product No.	Parts No.	Remark
1.	Program software for 27230 (PC-98)	—	—	lending only
	SLR SOFT PC/AT-27230	95901	M241-00A	for PC/AT, 5 inch FD
	//	95901	M241-00B	for PC/AT, 3.5 FD
	FLOPPY DISC 3.5 (EMPTY)	95901	M201	3.5 inch
	FLOPPY DISC 5.0 (EMPTY)	95901	M202	5 inch
2.	CCD POSITIONING JIG CPJ-27230 (CIRCLE)	95901	M214	
3.	PERSONAL COMPUTER	95901	M100	PC-98 model only
4.	Color display		N/A	
5-1.	MODULE BOARD PIO-24/24T	95901	M102	for PC-98
5-2.	PC/AT BOARD PIO-32/32T(PC)	95901	M125	for PC/AT
6-1.	INTERFACE CABLE DXIC-P98	95901	M114	for PC-98
6-2.	I/F CABLE PC/AT PCA96PS	95901	M126	for PC/AT
7.	SERIAL INTERFACE SIFI-269	95901	M103	
8.	INTERFACE BUFFER IFB-269	95901	M104	
9.	POWER SW ADAPTER	95901	M123	
10.	CCD POSITIONING JIG CPJ-259 (CROSS)	95901	M213	
11.	COLLIMATOR CHART OCRC-259	95901	M021	
12.	TEMP. BACK COVER TAB-269	95901	M113	
13.	POSITIONING JIG MAAJ-269	95901	J095	
14.	HEXAGON DRIVER HD-M1.5	95901	K072	
15.	SHUTTER TESTER EF-5000	95901	M003	
	(7PE-25A3)		N/A	
	(EF-8000)		N/A	
16.	Optical regulator for 24300		N/A	
17.	MASTER LENS ML-245	95901	N028	
18.	DIAPHRAGM SET RING KA-0-1A	95901	N026	
19.	FOCUS MASTER LENS KML-01	95901	N017	
20.	EXPOSURE MASTER LENS LML-240	95901	N027	
21.	DIAL GAUGE COMPARATOR PH-2	95901	N001	
22.	BLOCK GAUGE 229N-A01-A2	95901	N004	
23.	MOUNT BLOCK 236N-A1,A104-A	95901	N005	
24.	M/B SPACER 236N-A1,A104-A-A	95901	N006	
25.	M/B HOLDER 236N-A1,A104-A-B	95901	N007	
26.	COLLIMATOR 1000MM	95901	M019	
27.	DC POWER SUPPLY PAB18-5.5	95901	M028	18V,5.5A
	DC POWER SUPPLY PR-18-3	95901	M029	18V,3A
	DC POWER SUPPLY PR-18-5	95901	M030	18V,5A
28.	DIGITAL MULTI METER	95901	M054	